Sequence

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ARI17791 Sequence
ARI47792 Sequence
ARI49460 Sequence
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ARI36572 Sequence
AR036572 Sequence
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AR036579 Sequence
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Z92910 Homo sapien
AL35892 Human hered
AL353759 Human hered
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AX347044 Sequence
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AX4404378 Homo sapi
Y09799 H. sapiens H
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Y09800 H.sapiens H
AF184234 Homo Sapi
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AJ28839 Homo Sapi
AF144238 Homo Sapi
X09801 H.sapiens H
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1 (bases 1 to 10825)
Thomas, W.J., Drayna, D.T., Feder, J.N., Gnirke, A., Ruddy, D., Tsuchihashi, Z. and Wolff, R.K.
Hereditary hemochromatosis gene products
Patent: US 6140305-A 131-00T-2000;
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AUTHORS
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PAT 16-MAY-2001

Result

Homo sapi Human DNA

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AL136458 AC090170 AC012430 AP002354

| Best | | Similarity 100.0%; Pred. No. 0; | qq | 1021 |
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| Matches | m | 0; Ga | Qy | 1081 |
| 0y | | TCTAAGGTTGAGATAAAATTTTTAAATGTATGATTGAATTTTGAAAATCATAAATATTTA 60 | qq | 1081 |
| QQ | | 3 5 | Qy | 1141 |
| δ δ | | AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT | QQ | 1141 |
| gg | | 1 - | ΟY | 1201 |
| οy | 21 | CAGGATTTAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT | qq | 1201 |
| d d | 121 | ρ, ; | δy | 1261 |
| ολ | | GCTGTAGGAGAGAGAGAACTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT | qq | 1261 |
| d Q | 181 | <u>.</u> | ΟŊ | 1321 |
| ογ | | | qq | 1321 |
| 셤 | 241 | , | Qy | 1381 |
| δ | 01 | TTTCCCGCCCCCCAAAGAAGCGGAGATTTAACGGGACGTGCGGCCAGAGCTGGGGAA 360 | qa | 1381 |
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| qq | 481 | 54 | Qy | 1621 |
| δÿ | 541 | CAACCCTATCGCAAGCCCCTCTCCTACTTCTGCGTCCAGACCCCGTGAGGGAGTGC | QQ | 1621 |
| р | 541 | ۰ ۵ | QY | 1681 |
| δy | 601 | PACTGAACTGCAGATAGGGGTCCCTCGCCCCAGGACCTGCCCCCTCCCCCGGGTGT 6 | qq | 1681 |
| g | 601 | 9 | δλ | 1741 |
| ογ | 661 | CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT 720 | qq | 1741 |
| Ор | 661 | 7/ | QY | 1801 |
| δλ | 721 | TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTGG 780 | Db | 1801 |
| g | 721 | 9 6 | Qy | 1861 |
| ολ | 781 | ο α | qa | 1861 |
| අු | 781 | י ס | Qy | 1921 |
| Qy | 841 | AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGCAGGATCCGCACGG 900 | qq | 1921 |
| g | 841 | יארפים איני | QY | 1981 |
| δλ | 901 | o u | QΩ | 1981 |
| g | 901 | 006 Abbb | Qy | 2041 |
| Š ž | 961 | TCTGAATTCTTCACCATTCCACCACTTTTGGTGAGACTTGGGGTGGAGGTCTTGAGGT 1020 | Dp | 2041 |
| 3 7 | , , | 108 | δλ | 2101 |
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AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC CAAGGGAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA TTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT ATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG CTAGGCTTTATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA SEGAGGCTCCTGAGAGAGGCCTACCTCGGGCCTTTCCCCCACTCTTGGCAATTGTTCTTTT GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG ĭ

| | | 241 | 3301 TT | | 3361 CE | | | 3481 AT | 3481 AT | 3541 CT | | | | 3661 CC | 3721 CT | | 3781 CC | 3781 CC | 3841 CG | 3841 CG | 3901 TC | 3901 TC | 3961 AG | 3961 AG | 4021 CA | 4021 CA | 4081 AT | 4081 AT | 4141 GA | 4141 GA | 4201 TG | 4201 TG | | 4261 GG | 4321 CA |
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| | CTCGGGTTGAAAAA | | AATAAACAAGTAGTGGGGGAGTAGAGGCCCAAGAAGTAGGTAATGGGCTCAGAAGAGA | GGCTCAGAAGAGGA | GCCACAAACAAGGTTGTGCAGGCGCTGTAGGCTGTGGTGTAAACCAAGGAGTA | CTAGCCAAGGAGTA | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTGGTGGTGCTATGTGGAAAGCAGAATG | TGGAAAGCAGAATG | AAGGGAGCAACATTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGGCCAGGAAG | CATTGTCTCCTGAA | | AAGAGAAGAATTGG | | CTGGGTGTAGTAGCTCATGCCAAGGAGGCCAAGGAGGAGGAGAATTCCTGAGGA | TCCTGAGCTCAGGA | GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAATACAAAAATAA | AAATACAAAATTA | GCTGGGTGTGGTGGCATGCACCTGGTGATCCTACTTGGGAGGCTGAGGTGAGGTG TITTITITITITITITITITITITITITITITITI | | | #DARATHDARA | | THE COURT OF THE PERSON AND THE PERS | TGACTTGTTCTTTATTTAATTTTAATTGCCTGAGCAGTGGGGTAATTGCCAT | AGGATCTGCATTTG | | CCACATAGGCAGTT | | GTAATCCCAGCACT | | AAGCTTGGCCAACA | | GGTGGCGCACGCCT | | |
| | CCTGGTTAAGAAG | CCTGGTTAAGAAG | GAAGTAGGTAATG | SAAGTAGGTAATG | TGTGGTGTGAATT | TGTGGTGTGAATT | TCTGGCTGCTATG | rerecterrare | AGGAAGCTGTTAC | GGAGTGACAAAC | GGGAGTGACAAAC | STIGIGIGAGAGA | GTTGTGTGAGAGA | AAGGAGAGCAGAT | AAGGAGAGCAGAT | CCTTCTCTACAAA | CCTTCTCTACAAA | CTACTCGGGAGGC | | SCALGACIGIGO | Seasasason | CCCCTGAAAAG | SAGCAGTGGGGTA | GAGCAGTGGGGTA | TEGGGTAAATCA | TTGGGGTAAATCA | CCAAGTGGTGAGG | CCAAGTGGTGAGG | GTGGCTCACTTCT | GIGGCICACTICI | AGGAGTTTGAGAC | AGGAGTTTGAGAC | ATTAGCCTGGTGT | | |
| | AGTAGACAAACT | | AGTAGAGGCCAA | AGTAGAGGCCAA | GCCCCTGTAGGC | GCGCCTGTAGGC | TTAAAAGATTGC | TIAAAAGAITGC | GGGAGCCCAGCC | GGGAACAGAAAA | GGGAACAGAAAA | GAAGGATTCTAT | GAAGGATTCTAT | AAGGAGGAGGCC | AAGGAGGAGGCC | CACAGCAAAACC | CACAGCAAAACC | CTGTGATCCTAG | A DESCRIPTION AND A DESCRIPTIO | HILLIIIII AGGCTGCAGTGA | ASTOTOTOTOTOTO | TGTCTCCCTGA | արածաացցուն | TTTTATTGGCCT | GGAAAGAGCAGT | GGAAAGAGCAGT | CCAGTCAGGCTT | CCAGTCAGGCTT | AGGCTGGGCACG | AGGCTGGGCACG | TCATTTGAGGTC | TCATTGAGGTC | AAAAATACAAAA | HIIIIIIIIII | |
| | SCCACATGTCACC | SCCACATGTCACC | AGTAGTGCTGGG | AGTAGTGCTGGG | CAAGGTTGTGCAC | CAAGGITGIGCAC | CTGTCACAGGCTJ | CIGICACAGGCI | AACAGTAAAAGCA | GAGTGGGCTGGG | | GAAGGAAGTTGC | GAAGGAAGTTGCT | AGTAGCTCATGCC | AGTAGCTCATGC | ACCAGCCTGGGCA | ACCAGCCTGGGCA | 10111111111111111111111111111111111111 | | GCCCAGGAAGTTC | | CAGAGCAAGACC | ԴՐՐԸՐՐԻ ԹԱՐՐՐԻ Թ | TITITITI | ATGGTGAAGGCAGA | 11111111111111111111111111111111111111 | TAAGITTGAGAT | TAAGTTTGAGAT | NGAATTCAGGACC? | GAATTCAGGACC | TGAGGCAGGTAG | TGAGGCAGGTAG | ACCCCATGTCTACT | | |
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| | GTGGCC GTGGCC GTGGCC CTACCC CTACCC | ATGCA: TTGTA: TTGTA: CTGTA: CAGCC: | TCATG TCATG TCATG TCATG GGGAA(| TCATA/ TCATA/ TCATA/ TAGGT/ TAGGT/ TAGGT/ TAGGT/ TAGGT/ TILLI TAGGTA/ AATCA/ AATCA/ AATCA/ AATCA/ TILLI AGTA/ GGTGTT/ GGTGTT/ TILLI |
| | CAGAG 11111 CAGAG SAGTCT SAGTCT CTCTCC | MATCITE MATCITE MATCITE CACCC CACC CACCC C | CACAG | AGCTA MTCCTT MTCCTT TACAA TATTC STATTC SGTAAC |
| CACTGG ACAAGA ACAAGA ACAAGA AGCAGT AGCAGT AGCAGT AGCAGT | SAGTTT SAGTTT CCTAG FCCTAG | CCAATA CCAATA CCAATA CCAATA CILLII STGGCT CACTTT | 360063 307663 307663 307663 111111 11116600 146600 146600 146600 | SATCTC SAAGAA SAAGAA SAAGAA SAAGAA SAACTC CTATCT CTATCT CTATCT CATCTC ACATGC |
| 11111 TGACA/ AAGGC/ 11111111111111111111111111111111111 | GGTTG(GGTTG(CTCAA' | TTTAAL TTTTAAC GCACGC GCACGC GCACGC GTCACGC GTCACGC | AATTA AATTA AATTA AGCAT AGCAT CAGCC | TCAGA GGAGTA GGAGTAC GCTAC GCTAC CTGAC CTGAC TILLI CTGAC |
| | TCCCT TCCCT TCCCT ACTTT ACTTT ACTTT | TTTTA | ACAAA ACAAA ACAAA ACAAA GCAGG GCAGG | AGAATTATCA TATCAA CTGAAA CTGAAA TGAAA TGAAA TGAAA TGAAA TGAAA |
| | CCGGAA CCGGAA CCGGAA SAAGGG SAAGGG | TTGCT TTGCT TTGCT TTGCT TTGAAG | NAAAAT CACTGAG CCACTGAG CCACTGAG CCACTGAG CCACTGAGAAAAAAAAAA | NAAAAG NAAAAG IIIIII SCCACT SAATCA IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII |
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AACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG 5460 TTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT GAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG ATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG CCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC AGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCCAGAACATCACCATG GCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG TGGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG ATATACGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGATCTGG GTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGTTGAGAGGAGTGCC AATCAAAGGCTTTAACTTGCTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC ATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT TTTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAGAAAT AAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT ATAGAAGGAAGTGGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC

CCGACTCTTCTGAGCACCTACTTA 8040 TGAGATAGGTACTATTATCCCCAT 8100 ACGGTGGCTCACGCCTGTAATCCC 8160 AAAATTAGCTGGGCGTGGTGGCAG 8280 CITCTGAGTGAGCTTGAATCACAT 8640 AGGTGTTTTTCTAATTGGCATGA 7860 TCAGGAGATCGAGACCATCCTGGC 8220 GGAGAATGGCATGAACCCAGGAGG 8340 TITCAAACTCAGTCAATCTGACCG 8520 ICATITGGGAIGCIACICIAGIAI 7920 TCAGGAGATCGAGACCATCCTGGC 8220 CTCTGTTGCTCTTTGGCATTCA 8760 CTTCTGAGTGAGCTTGAATCACAT

| Db 9781 ATCTTGTGTATATAC Qy 9841 CTTTACATTTGTCT Db 9841 CTTTACATTTGTCT Qy 9901 TCTTCACTCTAGGGA Db 9901 TCTTCACTCTAGGGA Db 9901 TCTTCACTCTAGGGA | 9961 | 10021 | D 10081 AGGTAGCATTTGTT | 10141 | 10201 | 10261 | 10321 | 10381 | 10441 | 10501 | 10561 | 10621 | 10681 | 10741 | UY 10001 TANANALOCCCAAATI Db 10801 TANANACCCCAAATI | RESULT 2 AR117790 |
|--|----------------------|--|--|--|--|--|--|---------------------------------------|----------|--|--|---|---|--|--|--|
| | 8821 8881 8881 | 9941 GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA 9000 | 9001 AAAATGTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA 9060 11111111111111111111111111111111111 | 9061 AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT 9120 | 9121 CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGGGATTCTCCTGTCTCAGCCTCCCA 9180 | 9181 AGTAGGTGGGATTACAGGCGTGCACCATGCCCGGCTAATTTTTGTATTTTTAGTAG 9240 [111111111111111111111111111111111111 | 9241 GACAGGGTTTCACCATGTTGGCCAGGTGTCTCGAACTCTCCTGACCTCGTGATCCGCC 9300 | 9301 TGCCTC 9301 TGCCTC | 9361 | 9421 GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGCAGGTGCTTCAGGATACCATAT 9480 11 | 9481 ACAGCTCAGAAGTTTCTTCTTTAGCCATTAAAATTTTAGCAAAGATATCTCATCTCTT 9540 | 7 9541 TTAAACCATTTTCTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGTAAATGTGATTT 9600 | 9601 ACGCTCATTGTAGAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG 9660 | 9661 TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA 9720 | 9721 TATACTITAATAAATGIATATIGIATTGIATACIGCAIGATTITATIGAAGITCTIGITC 9780 | 9781 ATCTIGIGIATATACTTAATGGCTTTGTCATTTTGGAGACATTTATTTTGCTTCTAATTT 9840 |
| oy Oy Oy | Db Qy Db | oy da | Qy Dp | Oy Dp | QY | δλ | oy op | Qy | Oy Dp | Qy Dp | Qy | Oy Dp | Qy Db | Oy Db | γο αα | δ |

10200 10560 10080 10260 GGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG 10440 10440 10560 10680 10740 ACATICITCACAAACTCACACATTTAAAAAACAAAAACACIGICIC 10800 10200 10260 TTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG 10320 ATGACAAATTATTTCTCTCTTAATATCTTACTATACTGAAAGCAGA 10020 10080 0066 0066 0966 CITAATCGCITIGICATITIGGAGACATITATITIGCITCIAATIT 9840 TAGAAATTTTAAGTCCTCATTTTCTTTCGGTGTTTTTAAGCTTAA AAAGCCCCTGAAAATTTGAGAAAACAAACAAGAAACTACTTACCAG CAAAATTCTTATGTTGTATTATAATGTCATCTTATAATACTGT AACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT ACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC ACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC TITICATAAAC 10825

| -2001 Db 721 TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGGCTCCTTGAACCTGG Qy 781 AACTCGGGTTTATTTCCAATGTCAGCTGTTTTTTCCCCAGTCATCTAAACAGG Db 781 AACTCGGGTTTATTCCAATGTCAGCTGTTTTTTCCCCAGTCATCTTCAAACAGAGAGAG | QY 841 AAGTTCTTCCCTGAGTGCTTGCCGAGAAGCTGAGCAACCAAGCAGGATCCGCACGG 111111111111111111111111111111111111 | QY 961 TCTGAATTCTTCACCATTCCACCCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGTT | QY 1021 GGGAGGCTCCTGAGAGGCCTACTCGGGCCTTTCCCCACTCTTGGCAATTGTTCTTTT | Oy 1081 GCCTGGAAAATTAAGTATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG 11 1 1 1 1 1 1 1 1 | OY 1141 CTAGGCTTTATTGATTGCAATGTGCTGTGAATTAAGAGGCCTCTACAAAGTACTGA 11111111111111111111111111111111111 | Qy 1201 TAATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATCTGATGTTATTGA | Qy 1261 TTTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT | QY 1321 GGAATTCAGATTATAACTCTTTCAGGTTACAAGAACATAAATAA | QY 1381 ATGTTATTCAAGTACTACAGCTGCTTCTAATGTTGACAGTGATTTTGCCCTGTAG | OY 1441 TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACACACTTTGAGTTTTGGTA | OY 1501 CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG | Qy 1561 CAAATTATTCAATGGTACACTGGGCTTTGGTGGCGCAGAGCTCATGTTCACTTGATAGC | Qy 1621 TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAAAATTTCATGTTGAGCAG | QY 1681 AAATATTCATTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC | Qy 1741 CAAGGGAGAGAGAAACAAGTCTTTACCCTTTGATATTTGCATTCTAGTGGGAAA |
|---|--|---|---|---|--|---|--|--|--|---|---|---|---|--|--|
| AR117790 10825 bp DNA linear PAT 16-MAY-2 Sequence 3 from patent US 6140305. AR117790 AR117790.1 GI:14098696 Unknown. | ifi SS SS SS SS SS SS SS SS SS SS SS SS SS | 110825 /organism="unknown" 999 a 2253 c 2647 g 2926 t | DB 6; Length 10825; | O; MISMACCINES Z; INGELS RAATGTATGATTTTGAAAATCATAAATA AAATGTATGATTTTTTTTTT | | | GGTACCTT AGGAAGTT | CCATCCCCG | Tracisescriciculaructrasscratascristrasscristrasscristrasscricicus 300 Titcccccccccaaaagaagcggagattaaaggggagcgggggggg | | AIGGGCCCGCGGGCGCGCGCGCGTTCTCCTCTGATGCTTTTGCAGACCGCGGTCCTG 420 CAGGGGCGCTTGCTGCGGAGGCTGCGGGGGGAACTAGGGGGCGCGGGGGGGTG 480 TITTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT | | | TCARCCCTATCCGCAAGCCCCTTCTCCCTACTTTCTGCGTCCCCGGACCCCGTCAGGGGAGTGC | SAATGCTTT |

| Dp | 1801 | GATGACAATAAGGAAATGAGGAAAGATATACAAGAAATGAAAATGATGGTGTGTGGA 1860 | |
|-----------|--------------|---|--|
| oy B | 1861 | AACCAGAGAAGTCAGGCCAGTCCTGGGCCTGACACTTGAGCAGAGACATGAAGGA 192 | |
| oy Oy | 1921 | AATAAGAATGATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG 1980 | |
| Oy Dp | 1981 1981 | TTGGATTAAAAAGGGGGTTTTCTCAGCACTACTCATGTGTGTG | |
| Oy Dp | 2041 | CGGCGTGGGGGTGGGAAGGGGACTACCATCTGCATGTAGATGTCTAGCAGTATCCTGT 2100 | |
| oy Op | 2101 | CCTCCCTACTCACTAGGGGCGCACTCCCCCAGTCTTGACAAAAATGTCTCT 2160 | |
| oy Op | 2161 | AAACTTIGCCACAIGICACCTAGIAGACAAACICCIGGITAAGAAGCTCGGGITGAAAA 2220 | |
| Qy Db | 2221 | AATAAACAAGTAGTGCTGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGA 2280 | |
| Qy Dp | 2281 | GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA 2340 | |
| 0y Db | 2341 | ACAGIGAICIGICACAGGCITITAAAAGATIGCICIGGCIGCIATGIGGAAAGCAGAATG 2400 | |
| O.y | 2401 | AAGGGAGCAACAGTAAAAGCAGGGGGCCCAGCAGGAAGCTGTTACACAGTCCAGGCAAG 2460 | |
| Qy Db | 2461 | AGGTAGTGGAGTGGGCTGGGAGACAGAAAAGGAGTGACAAACCATTGTCTCCTGAA 2520 | |
| oy Ob | 2521 | Tatatictgaaggaagtigctgaaggattctatgttgtgagagaaaggaaggaaggaa | |
| Oy Bb | 2581 | CTGGGTGTAGTAGCTCATGCCAAGGAGGCCAAGGAGAGCAGATTCCTGAGCTCAGGA 2640 | |
| oy ep | 2641 | GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAATACAAAAATTA 2700 | |
| oy op | 2701 | GCTGGGTGTGGTGCCATGCACCTGTGATCCTAGCTACTCGGGGGGCTGAGGTGGAGGGTA 2760 | |
| o do | 2761 | TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC 2820 | |
| Oy Op | 2821 | CTAGGTGACAGAGCAGACCCTGTCCCCTGACCCCCTGAAAAGAGAGAAGAGTTAAAGT 2880 | |
| Oỷ. Db | 2881 | TGACTTTGTTCTTTATTTTATTGGCCTGAGCAGTGGGGTAATTGGCAAT 2940 | |

| oy da | 2941 | TTCTGAGATGGTGAAGGCAGAGGAAGAGCAGTTTGGGGGTAAATCAAGGATCTGCATTTG 3000 |
|-------|------|---|
| Qy . | 0 | ACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGGGGGCCACATAGGCGAGTT 3 |
| qa | 3001 | GACATGTTAAGTTTGAGATTCCAGTCAGCTTCCAAGTGGTGAGGCCACATAGGCAGTT 3 |
| Qy | 9 | CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT 3120 |
| QΩ | 3061 | rgtaagaattcaggaccaaggctggggagggggggggggg |
| Qy | 12 | SATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA 3 |
| ga | 2 | GGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA 3 |
| Qy | 18 | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCCT 3240 |
| ορ | 3181 | GGTGAAACCCCATGTCTACTAAAATACAAAATTAGCCTGGTGTGGTGGGGGCACGCCT 3 |
| Oy | 24 | ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG 3300 |
| qa | 3241 | TAGICCCAGGTITICAGGAGGCITAGGIAGGAGAATCCCITGAACCCAGGAGGTGCAGG |
| Qy | 3301 | CCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT 3 |
| QQ | 3301 | TGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT 3 |
| QY | 3361 | TCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG 3 |
| qa | 3361 | CTGAAGGAATTATTCCTCAGGATTTGGG 3 |
| δδ | 3421 | AATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACCTTAAC |
| QO . | 3421 | CTAATTIGCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACGTTAAC 3 |
| QY | 3481 | ATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 3 |
| QO | 3481 | TTTTCTAGAATCCACCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 3 |
| yo. | 3541 | GAGGGGTGGCAGCCACGTGTGGCAGAAAAAGCACACAAGGAAAAGC 3 |
| Db | 3541 | TGGGGGGAGTGAGGGGGGGGGGGGCAGCCACGTGTGGGGAAAAGCACACAAGGAAAGGC 36 |
| QY | 3601 | CCAGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCTTCACAAAATGAGGA |
| QQ | 3601 | AGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCTTCACAAAATGAGGA 36 |
| QY | 3661 | CAGCTGATGGTATGAGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCC |
| qa | 3661 | CAGACACAGGCTGATGATGAGGTTGATGCAGGTGTGTGGGAGCCTCAACATCCTGCTCCC 37 |
| QY | 3721 | ACACTCTCTGCACTA 37 |
| qa | 3721 | TCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTGTGCACTA 37 |
| Qy | 3781 | CCTCTTCATGGGTGCCTCAGAGCACGTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA 3840 |
| qq | 3781 | CCICITCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA |
| Qy | 3841 | ATGACC |
| qa | 3841 | GTGGATGACCAGCTGTTCTTTTTTTTTTTTTGAGGTCGCCGTGTGGAGCCCCGGAAC 39 |
| QY | 3901 | TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCTGAA 3960 |
| QQ | 3901 | CCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCTGAA 39 |
| Qy | 3961 | AGGGTGGGATCACATGTTCAC |
| qq | 3961 | AGGGTGGGATCACATTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACA |

| ₄ ය | δ a | AQ Q | ਨੇ _ਕ ਿ | δ a . | ko da . | ප් සි | 전 원 전 | ් සි _ර | · 유 전 | දි දි දි | ි සි රි | . да | ф qq , | Ar aa | λδ αα · | λο αα | | δδ — |
|--|---|--|---|---|--|--|--|--|--|--|--|--|---|---|---|--|---|--|
| | | | | | | | | | | | | | | | | | | |
| 4080 | 4140 | 4200 | 4260 | 4320 | 4380 | 4440 | 4500 | 4560 | 4620 | 4680 | 4740 | 4800 | 4860 | 4920 | 4980 | 5040 | 5100 | 5160 |
| . CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTCT | ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGGAAGAGGAAG | GAATTIGCTTCCTGAGATCATTIGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT | TGGTTGCAGTTAACAAGGCTGGGGATTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG | GGCTGTGAAATGCAAGAGACAGTACCGAGGCTACTGGAAGTACGGGTATGATGGG | CAGGACCACCTTGAATTCTGCCCTGACACACTGGATTGGAGAGCAGCAGAACCCAGGGCC | TGCCCCACCAAGCTGGAAGGCACAAGATTCGGGCCAGGCAGAAACAGGGCCTAC | CIGGAGAGGGACTGCCCTGCACAGCIGCAGCAGTTGCTGGAGCTGGGGAGAGGTGTTTTG | GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG | AGGTTGCAGGGCACGGAATCCCTGGTTGCAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC | TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA | TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAGGGAA | GTGTCTATGGCCCTTGCTTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA | AAATTCAGAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG | AGGCCGAGCCGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA | ACCGTCTCTAAAAAAATACAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA | GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA | GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAA | . AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA |
| 4021, | 4081 | 4141 | 4201 | 4261 | 4321 | 4381 | 4441 | 4501 | 4561 | 4621 | 4681 | 4741 | 4801 | 4861 | 4921 | 4981 | 5041 | 5101 |
| . y | Qy Dp | Qy Db | Qy Db | Qy | Qy | Qy Db | Qy Dp | Oy Dp | Qy Db | Qy | QQ Dp | QY Db | QY | Qy Db | ζ Q | Qy Db | Qy | δλ |

| 5101 5101 5161 521 522 522 523 523 534 540 540 540 540 540 540 540 540 540 54 | |
|---|--|
|---|--|

| qq | 6181 | TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGCAGAGGGGATCTGGCATCCATGGG 6240 |
|------------|--------------|---|
| y a | 6241 | AAGCATTTTTCTCATTTATATTCTTTGGGACACCAGCAGCTCCCTGGGACACAAAAT 6300 |
| 9 ; | 4 6 | CALITICICATINAMENTICITIGGGGGCACCAGCAGCICCCIGGGGGGACACAGAAANI 030 SAMMOMOCOCAGAAAAAAAAAAAAAAAAAAAAAAAAAAAAA |
| <u> </u> | 30 | ANTGGTICLCCCCAGAATGAAGTCTCTAATTCAACAACATCTTCAGGGCACCTGTTATT 9300 |
| Oy Dp | 6361 6361 | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT 6420 |
| QY Ob | 6421 | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG 6480 |
| op Gy | 6481 | ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG 6540 |
| Qy Dp | 6541 | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAGAGCTGGATTCCA 6600 |
| Qy Dp | 6601 | TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGAGGAGCAACCATGCCAAGTAGGA 6660 |
| Oy Dp | 6661 | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 6720 |
| S G | 6721 6721 | agctatcactcaccaattatgcatttctacccctgaacatctgtggtggtgggaaaga 6780 |
| Qy Db | 6781 6781 | GAATCAGAAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA 6840 |
| Qy Db | 6841 | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGGGCCACGATCCTCCTTATATGGTG 6900 |
| Oy Dp | 6901 | aatgtgttgttaagaagttagatgagaggtgaggaccagttagaagccaataagcat 6960 |
| Qy Dp | 6961 6961 | TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG 7020 |
| Qy | 7021 | GTGAATGAGGAAAATAAGGAAGAGAGAAGAGAGGTGGTGCCTAGGTTTGTGATGCCT 7080 |
| Qy Dp | 7081 | CTTCCTGGGTCTCTTGTCTCCACAGGAGGGCCATGGGGCACTACGTCTTAGCTGAACG 7140 |
| Oy Db | 7141 | TGAGTGACACCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA 7200 |
| Oy Dp | 7201 | GGGAGTGCATTTATGAGCTCTTCATGTTCAGGAGAGAGTTGAACCTAAACATAGAAATT 7260 |
| Oy . Db | 7261 7261 | GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAGATTTCCCCAT 7320 |

| yo da | 7321 | TIAGGITICTGAGTICCTGCAIGCCGGTGAICCCTAGCTGTGACCTCTCCCCTGGAACTG 7380 |
|----------|------|---|
| QY | | SAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGGTCACCTCAGAG 7 |
| 8 8 | 7441 | ATACACCTATGTCATTTCATTTCCTATTTTTGGAAGAGGACTCCTTAAATTTGGGGGA 7 |
| qa | 4 | CTTAAATTTGGGGGA 7 |
| yo q | ע ע | TACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT 7 |
| ò | າ ທົ | THACCAGATTTTTACACATGTATGTATGCATTTTCTGGACCCGTTCAACTTTTCCT 7 |
| qq | | |
| Qy | 7621 | NATICITITIC THE COORDINATION OF THE CONTROL OF THE |
| qq | | TGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC 7 |
| Qy E | ن و | AGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG 7 |
| 2 2 | | C DESCRIPTION OF THE PROPERTY |
| 7 원 | 74 | |
| Qy | 7801 | TAGGAGGCAAATATCTTGAAAGGGGTTGTGGAAGAGGTGTTTTTCTAATTGGCATGA 7 |
| qq | 7801 | AAAGGGGTTGTGAAGAGGTGTTTTTTTTTTGCAATGA 7 |
| QY | 7861 | TGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT 7 |
| QQ | 7861 | GGTGTCATACAGATTCCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT 1 |
| Οy | 7921 | CAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAAAA 7 |
| qq | 9 | CCAGACCTGAAGAATCACAATATTTTTTACTACCTGGTCTCTCCTTGTTCTGATAATGAAA 7 |
| Qy | 7981 | TATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA E |
| QQ | Ō | INTGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA E |
| ΟŽ | 4 | GCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT |
| QQ | 8041 | CATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT 8 |
| ΟŸ | 8101 | CTITITIAAAIGAAGAAAGIGAAGIAGGCCGGGAACGGIGGCTCACGCCTGTAAICCC E |
| QQ | 8101 | ICTITITIAATGAAGAAGTGAAGTAGGCCGGCCACGGTGCCTCACGCCTGTAATCCC E |
| Οy | 8161 | TITTGGGAGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 6 |
| qq | 8161 | ACTITICGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGCCATCCTGG |
| ΟŸ | 8221 | AACCCCATCTCTAATAAAATACAAAAATTAGCTGGGCGTGGTGCCAG 82 |
| qq | 8221 | AACATGGTGAAACCCCATCTCTAATAAAATACAAAAATTAGCTGGGGGTGGTGGGAG 82 |
| ΟŸ | 8281 | TGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG 83 |
| qq | 8281 | CGCCTGTAGTCCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG 834 |
| QY | 8341 | CTICCAGIGAGCCGAGITIGCGCCACIGCACICCAGCCIAGGIGACAGAGIGAGA 840 |
| qa | 8341 | SCTIGCAGIGAGCCGAGITIGCGCCACTGCACTCCAGCCTAGGIGACAGAGGAGA 8 |

| QY 84 Db 84 QY 84 | nctcaaaaaataaaataaaataaaataaaatgaaaaagaaaaaa |
|-------------------------|--|
| \$ 40 | insperint conferences for the second conference of the second conferenc |
| 85 | 21 TTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA |
| 85. | 81 GGAAGGAGATGGCTCTTCTCTTGTCTCATTGTGTTTCTTCTGAGTGAG |
| 98 99 | 1 GAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATC |
| Oy 87 | 01 CCTGAAGGACCTGGAATGTGACTCCCTTGCTCTTGTTGCTCTTTGGCATTCA 8760 |
| Oy 87 Db 87 | 61 TITCITIGGACCCIACGCAAGGACTGTAATIGGTGGGGACAGCTAGTGGCCCTGCTGGGC 8820 |
| Oy 88 Db 88 | 21 TTCACACACGGTGTCCTCCTAGGCCAGTGCCTCTGGAGTCAGAGTCTGGTGGTATTTC 8880 1111111111111111111111111111111111 |
| Qy 88 Db 88 | 81 CCTCAATGAAGTGGAGTAAGCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG 8940 |
| Oy 89. | 41 GCTFAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAA 9000 |
| OY 90 | 001 AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA 9060 |
| Oy 90 Db 90 | 61 AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCATGGCATGAT 9120 |
| Qy 91 Db 91 | 21 CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA 9180 |
| 91 | 81 AGTAGCTGGGATTACAGGCGTGCACCATGCCCGGCTAATTTTTGTATTTTTAGTAGA 9240 |
| oy 92 Db 92 | 41 GACAGGGTITCACCATGTTGGCCAGGGTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC 9300 |
| Qy 93 Db 93 | 01 TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCCCCCGGCCGTCAAA 9360 |
| Qy 93 Db 93 | 61 AGAGECTTAATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG 9420 |
| Oy 94 Db 94 | 21 GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGCAGGTGCTTCAGGATACCATAT 9480 |
| 94 | 81 ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTTTTT 9540 |

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                    AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC
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Thomas,W.J., Drayna,D.T., Feder,J.N., Gnirke,A., Ruddy,D. Tsuchihashi,Z. and Wolff,R.K.
Tsuchihashi,Z. and Wolff,R.K.
Hereditary hancohromatosis gene products
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Patent: US 6140305-A 5 31-OCT-2000;
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Sequence 5 from patent US 6140305.
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Best Local Similarity 100.0%;
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| Qy Dp | 1561 1561 | CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGACCTCATGTCTCCACTTCATAGC 1620 | |
| Qy Db | 1621 1621 | TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG 1680 | |
| Qy | 1681 1681 | AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCC 1740 | |
| Qy | 1741 | AAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA 180 | |
| Oy Db | 1801 | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA 1860 | |
| Oy Dp | 1861 1861 | GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA 1920 | |
| Oy Dp | 1921 1921 | aataagaatgatattgactgggagcagtatttcccaggcaaactgagtgggcctggcaag 1980 | |
| Qy Dp | 1981 1981 | TIGGATTAAAAAGCGGGTTTTCTCAGCACTACTCATGTGTGTG | |
| Qy Db | 2041 | CGGCGTGGGGGAAGGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT 2100 | |
| Qy Db | 2101 | CCTCCCTACTCACTAGGGGCTACCTCCCCCAGTCTTGACAACCAAAAATGTCTCT 2160 | |
| Oy Dp | 2161 | aaacttfgccacafgtcacctagtagacaaactcctggttaagaagctcgggttgaaaa 2220 | |
| Oy Dp | 2221 | aataaacaagtagtgctggggagtagaggccaagaagtaggtaatgggctcagaagagga 2280 | |
| Oy Db | 2281 2281 | GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA 2340 | |
| O _Y | 2341 | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG 2400 | |
| Qy Db | 2401 | aagggagcaacagtaaaagc | |
| Qy Db | 2461 | AGGTAGEGGGTGGGGTGGGGAACAGAAAGGGACGACAAACCATTGTCTCCTGAA 2520 | |
| Qy Db | 2521 2521 | Tatattotgaaggaagttgotgaaggattotatgttgotgogagaagagagag | |
| Οy | 2581 | CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGCAGATTCCTGAGGTCAGGA 2640 | |

3180 3420 3420 3480 3480 3540 3540 3600 2880 2940 3000 3000 3060 3060 3120 3120 3180 3240 3240 3300 3300 3360 3360 3600 3660 2820 2880 GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAATACAAAAATTA 2700 CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGCAGATTCCTGAGCTCAGGA 2640 TGACTTTGTTCTTTATTTAATTTTAATTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT 3241 ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACCCTTAAC ATTTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT 3121 TIGGIGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA CTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG CCAGACACAGCTGATGGTATGAGTTGATGCAGGTGTGTGGGGGCCTCAACATCCTGCTCCC GCTGGGTGTGGCGTGCACCTGTGATCCTAGCTACTTCGGGGAGGCTGAGGTGGAGGTA TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC CTAGGTGACAGAGCAAGACCCTGTCTCCCCTGACCCCTGAAAAAGAGAAGAGTTAAAGT TTCTGAGATGGTGAAGGCAGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT 3181 TGGTGAAACCCCATGTCTACTAAAATACAAAATTAGCCTGGTGTGGTGGCGCACGCCT 3241 3361 3541 3541 3661 2761 2881 2941 3061 3361 3421 3421 3481 3481 3601 3601 3661 2641 2821 2581 2641 2701 2701 2761 2821 3001 qq g g Ob ōλ qq qq g qq g g δλ qq \tilde{o} δ qq οy οy δ Qγ Ω QY ò 윤 $\dot{\alpha}$ q δ QQ QY g ő δ δŽ g g Ω

GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAATCTATTGGGGGTTGAGAGGAGTGCC 5940 AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTAGAGTCCAATCTTAGG TCTTCAGTGACCACTCTACGGTQTCGGGCCTTGAACTACCCCCAGAACATCACCCATG CAGAGATATACGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGATCTGG CAGAGATATACGTGCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGATCTGG AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA ACCCGTCTCTAAAAAAAAATACAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAAA CTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCAATCATTTCAATGCACATAA AGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACAGATATGTATTTACATGTG AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC CTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG Óλ QQ QY Db Dp oy bb 90 Qy Db QΥ q QY Db QΥ Db δý qq

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| Db 5881 GGTATGTGACTGAGAGAGCCAGGAGCTGAGAAATCTATTGGGGGTTGAGAGGAGTGCC 5940 | QY 5941 TGAGGAGGTAATTATGGCAGTGAGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG 6000 | QY 6001 GTGGCAATCAAAGGCTTTAACTTTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC 6000 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | Qy 6061 TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTTGTCGTCATCTTGTTCATTGGAATTT 6120 | OY 6121 TGTTCATAATATTAAGGAAGAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 6180 | OY 6181 TAGTACCTCTGCCCCAGGCACAGTGGGAAGAGGGCAGAGGGATCTGGCATCCATGGG 6240 | OY 6241 AAGCATTTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAGAAAAT 6300 | OY 6301 AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT 6360 | OY 6361 TITGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT 6420 | Qy 6421 TCTCAGAACCCAAATCTGGTAGGAATGAAATTGATAGCAAGTAAATGTTAAAGAAG 6480 | QY 6481 ACCCCATGAGGGCCCGAGGAGCAAGGAAGGAAGGGTGTCCAAAGGAAAGAAGAATG 6540 | OY 6541 ATCACATICAGCIGGGGAICAAGAICATGGGAICTIGAAGGAGAAGCIGGAITCCA 6600 | QY 6601 TTAGGTGAGGTTGAAGATGATGGAGGGGGGCGACGGACCATGCCAAGTAGGA 6660 | OY 6661 GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 6720 | QY 6721 AGCTATCACCAATATGCATTTCTACCCCTGAACATCTGTGGTAGGGAAAGA 6780 | QY 6781 GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA 6840 | OY 6841 TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGACCACGATCTCCCTTATATGGTG 6900 | OY 6901 AATGTGTTAAGAAGTTAGAGGGGGGGGGACCAGTTAGAAAGCCAATAAGCAT 6960 | Oy 6961 TICCAGATGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG 7020 |
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| 8160 8160 8220 8220 | 8280 8340 8340 | | 8460 8520 8520 | 8580 8580 | 8640 8640 | 8700 8700 | 8760 8760 | 8820 | 8880 | 8940 | 0006 | 9060 | 9120 9120 | 9180 |
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| TCTTTTTAAATGAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAAT IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | 11111111111111111111111111111111111111 | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA | CTCCATCTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | TTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | GGAAGGAGATGGCTCTTCTTGTCTCATGGTGTTTCTTCTGAGTGAG | GAAGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC | CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTGTTGCTCTTTTGGCATTCA | TTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACACTACTGGCCCTGCTGGCCTGGCCTGCTGGCCTGCTGGCCTACGCCTACGCCTACGCCTACGCCTACGCCTGCTGGGCGACAGCTGGGCGACAGCTACGTGGGGGACAGCTAGTGGTGGGGGACAGCTAGTGGTGGGCGACAGCTAGCT | 1 TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC | 1 CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG | 1 GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACTAAAAA | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA | 1 AAAGAGTCTTTTTTTTTTTTGGGACTCTATTGCCCAGGCTGGAGTGCATGGTTGTTTTTTTT | PTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGGATTCTCCTGTCTCAGCCTCCCA |
| 8101 8101 8161 8161 | 22 28 28 | 8341 8341 8401 | 8401 8461 8461 | 8521 8521 | 8581 8581 | 8641 | 8701 8701 | 8761 8761 | 8821 | 8881 | 8941 | 9001 | 906 | 912 |
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ITTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG 10320 10200 10020 10080 10080 10140 10140 10260 10020 9780 9840 9840 0066 0966 0966 0996 0996 9720 9720 9780 0066 9540 0096 0096 9300 9360 9360 9420 9420 9480 9480 CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC AGAGTCTTAATATATATATCCAGATGGCATGTCTTTACTTTATGTTACTACATGCACTTG TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTTGTATTTTAGTAGA 10081 10141 10141 10201 10261 9661 9721 9781 9781 9841 9841 9901 10081 10201 9541 1096 9601 1996 9721 9481 9541 9181 9301 9361 9361 9421 9421 9481 9181 9241 9241 9301 g δλ QQ ò g ò Db Ω qq qq ò g QΫ g Ω g g ò g g ÓΫ g QΫ́ g φ qq ò рp δý g φ δ δ ΟŊ g QΥ

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                            GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG
                                                        CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA
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Thomas,W.J., Drayna,D.T., Feder,J.N., Gnirke,A., Ruddy,D.,
Tsuchihashi,Z. and Wolff,R.K.
Hereditary hemochromatosis gene products
Patent: US 6140305-A 7 31-OCT-2000;
Location/Qualifiers
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          CAGGGGCGCTTGCTGCGTGAGTCCGAGGGCTGCGGGGGAACTAGGGGGCGCGGGGGGGTG
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| 1201 T 1201 T 1261 T | 1261 T 1321 G 1321 G 1321 G | 1381 ATC | 1441 T 1 1441 T | 1501 C 1501 C | 1561 C 1561 C | 1621 T | 1681 A 1681 A | 1741 C | 1801 0 | 1861 G | 1921 7 | 1981 T 1981 T | 2041 (| 2101 C | 2161 / | 2221 2 | |
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| qq | 3361 CT | CTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | |
| ΟŊ | 3421 TC | CTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACCTTAAC 3480 | |
| ga | 3421 TC | TGCCCTGAGCACCAACTCCT | |
| QY | 3481 AT 3481 AT | AITTICTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 3540 | |
| QY | 3541 CT 3541 CT | CTGGGGGCAGTGAGGGGGTGGCAGCTGTGGCAGAAAAGCACACAAGGAAAGAGC 3600 | |
| Qy | 3601 AC | ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACCTTCACAAAATGAGGA 360 | |
| QY | 3661 CC 3661 CC | CCAGACACCTGATGGTATGAGTTGATGCAGTGTGGGGCCTCAACATCCTGCTCCC 3720 | |
| Qy | 3721 CT 3721 CT | CICCTACTACACATGGTTAAGGCCTGTTGCTCTGCTCCAGGTTCACACTCTCTGCACTA 3780 | |
| Qy Dp | 3781 CC 3781 CC | CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGCCTA.3840 | |
| Qy Dp | 3841 CG 3841 CG | CGTGGATGACCAGCTGTTCGTGTTCTAJGATNATGAGGCGCCGGTGGGGGCCCCGAAC 3900 . | |
| Oy Op | 3901 TC 3901 TC | TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCTGAA 3960 | |
| Sy Bp | 3961 AG 3961 AG | AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG 4020 | |
| Oy Op | 4021 CP 4021 CP | CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 4080 | |
| Oy Dp | 4081 AU | arccatcttgaaggaaacagctggaagtctgaggtcttgtgggagcagggaagagggaag 1140 | |
| oy O | 4141 GF 4141 GF | GAATTIGCTICCIGAGAICATTIGGICCTIGGGGAIGGIGGAAAIAGGGACCTATICCTT 4200 | |
| OY Db | 4201 TC 4201 TC | GGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACCCTGCAGGTCATCCTG 4260 | |
| O.Y Db | 4261 GC 4261 GC | GGCTGTGAAATGCAAGAACAGTACCGAGGCTACTGGAAGTACGGGTATGATGGG 4320 | |
| Oy Dp | 4321 CZ 4321 CZ | CAGGACCACCTIGAATICTGCCCTGACACTGGATTGGACAGCAGCAGAACCCAGGGCC 4380 | |
| oy Dp | 4381 TC 4381 TC | GGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGGGGGAGAACAGGGCCTAC 4440 | |
| QY | 4441 CT 4441 CT | TGGAGAGGGACTGCCCTGCACAGCTGCAGCAGTTGCTGGAGCTGGGAGAGGTGTTTTG 4500 | |
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5460 4680 4740 4860 4860 4920 4980 4980 5040 5040 5100 5100 5160 5160 5220 5220 5280 5280 5340 5340 5400 5400 5460 5520 5520 5580 4560 4620 4620 4680 4800 4800 4920 TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAGGGAA GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAAA AAAAAAAAAAAAAAAAAAAGAGAATTCAGAGATCTCAGCTATCATATGAATACCAGGACAAA AGGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATTTACATGTG AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA GTGTCTATGGCCCTTGCTTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG ACCCGTCTCTAAAAAAATACAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA 4621 4681 4741 4801 4861 4861 4981 5041 5041 5101 5101 5161 5221 5281 5281 5341 5341 5401 5401 5521 5521 4501 4561 4561 4621 4681 4741 4801 4921 4921 4981 5161 5221 5461 5461 4501 Db Op qq g δŏ qq QQ δλ Op QQ Qγ QQ Øχ QQ Qγ g ò qq δŻ qq δy qq οp QQ QQ Qy q δ δλ δ Q δγ QΥ QΥ Q

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| 861 861 | AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT 7 | 1920 1920 |
| 921 | TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA | 7980 7980 |
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| 041 | CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT | 8100 8100 |
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| 161 161 | AGCACTITIGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC | 8220 8220 |
| 221 221 | TAACATGGTGAAACCCCATCTCTAATAAAATACAAAAAATTAGCTGGGCGTGGTGGCGCGCGTGGTGGTGGTGGTGGTGGTG | 8280 8280 |
| 281 281 | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG | 8340 8340 |
| 341 341 | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGTGAGA : | 8400 8400 |
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| 8581 8581 | GGAAGGAGATGGCTCTTCTCTTGTCTCATTGTGTTTCTTCTGAGTGAG | 8640 8640 |
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| 8761 8761 | TITCTITGGACCCTACGCAAGGACTGTAAITGGTGGGGACAGCTAGTGGCCCTGCTGGGCC | 8820 8820 |
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Tsuchihashi, 2. and Wolff, R.K. Method for determining the presence hemochromatcsis gene mutation patent: US 6228594-A 1 08-MAY-2001;
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| Qy | 901 | GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGGCGCGCAAAGAGTGGCGTTGG | δλ | 1981 TTGG | GAT |
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| ò | 1201 | TAATGAACATGTAACCAATGTAACCAACTGTAATTAACAACACCTCTCTCT | Qy | 2281 GCCA | CAA |
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| Qy | 1261 | TITICACITAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT 13 | ΟY | 2341 ACAGTGA | TGA |
| qq | 1261 | | qa | 2341 ACAG | TGA |
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| qa | 1321 | GGAATTCAGATTATAACTCTTTTCAGGTTACAAAGAACATAAATAA | QQ | | GAG |
| οy | 1381 | AIGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG 1440 | QY | 2461 AGGTAGT | 'AGT |
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| ΟŊ | 1561 | CAAAITTATTCAATGGTACACTGGGCTTTGGTGGCAGGCTCATGTCTCCATAGC 1620 | QY | 2641 GTTCAAG | AAG |
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| $t\hat{g} \rightarrow t\hat{g}$ | JTTGCTGAAGGATTCTATGTTGTGTGAGAGA |
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| TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA | 31 | Db 4 |
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| TGGTGAACCCCATGTCTACTAAAATACAAAATTAGCCTGGTGTGGTGGCGCCCCCTTTTTTTT | 324 | 4 do |
| ATAGTCCCAGGTTTCAGGAGGCTTAGGTAGGAGGAATCCCTTG | ATCCTTGAACCCAGGGGTGCAGG 3300 | qq qq |
| ATAGITCCCAGGITTICAGGAGGCTIAGGIAGGAGA | SATAGAGTGAGACTCTGT 33 | QY |
| TTGCAGTGAGCTGAGATTGTGCCACTGCAGCTCAGGTTGTGTGCCACTGCAGGTTGTGTGCAGCTGCAGTTGTGCAGCTGCAGTGCAGCTGCAGCTGCAGCTGAGTGTGTGT | 36 | qa . |
| CTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATT | AAGGAATTATTCCTCAGGATTGGG 3420 | A G |
| TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAAC | TAAC 348 | δŏ |
| | | 90 0 |
| ATTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTC | CTAATCATGACTATTGGAATAGGAT 3540 | q q |
| , E | 360 | yo g |
| CTGGGGGCAGTGAGGGGGTGGCAGCACGTGTGGGGAGAAAAGCACACAAGGAAGAAGAGC | | A 0 |
| ACCCAGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA | ACTCACCCTTCACAAAATGAGGA 3660 | ଫ୍ର ଟ |
| CCAGACACAGGTGATGGTATGAGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCC | | da da |
| CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCT | A 378 | δy E |
| CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACGTTCTCT | GCACT | δ δ |
| 81 CCTCTTCATGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCT/ | TICCTIGITIGAAGCTTIGGGCTA 3840 | g qq |
| CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC | ABGTCGCCGTGTGGAGCCCGAAC 3900 | λο dd |
| TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGT | SCTGCAGCTGAGTCTGAA 3960 | oy da |
| AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACACACA | ATTATGGAAAATCACAACCACAG 4020 | 3 A 8 |
| CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCT: | TTGTCAGAGCITTTCAICTITTC 4080 | g 2 |
| 1 ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCT | CTGAGGTCTTGTGGGAGCAGGAAGAGGGAAG 4140 | 90 0 |
| 1 GAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGAT | GGTGGAAATAGGGACCTATTCCTT 4200 | |

AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC CTGGAGAGGGACTGCCCTGCAGCAGCTGCAGCAGTTGCTGGAGCTGGGGAGAGGTGTTTTG TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTTCTCCATGCATATGGCTCAAAGGGAA AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA ACCCGTCTCTAAAAAATACAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCTGCAGGTCATGCTG AGGTTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC TGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGGCAAGAACAGGGCCTAC CAGGACCACCTTGAATTCTGCCCTGACACTGGATTGGAGAGCAGCAGAACCCAGGGCC

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| g | 5221 | AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC 5280 | |
| Oy Dp | 5281 | | |
| 3 3 | | SCINCELLOCULOCULOR CONTROL CONTROL CONTROL CAN INCAMINATION STATEMENT STATEM | |
| S S | 5341 | woscaratitaticatisticakaakaakaakateessa ka | |
| Oy Db | 5401 | AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG 5460 | |
| δ | 46 | CTGTAGCTTGTTTTTTCTGAAAAGGGTATTTCCTTCCTCC 552 | |
| QQ | 46 | CAAAATGGTGTCTCTCTTTTTTTTTTTTTTTTTTTTTTT | |
| O D D | 5521 5521 | AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCTCTC 5580 | |
| Qy | 5581 5581 | CTCATCCTTCCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACATCATGTGACC 5640 | |
| Qy Dp | 5641 | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG 5700 | |
| Oy Dp | 5701 | CGAACCTAAAGACGTATTG 576 | |
| QY | | ATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG 582 | |
| a : | 5761 5021 | CCAATGGGGATGGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG 582 | |
| 2 G | o co | CAGAGATATACCINCCAGGIGGAGCACCAGGCCTGGATCAGCCCTCATTGTGATCTGG 5880 [| |
| Oy Db | 5881 | GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGTTGAGAGGAGTGCC 5940 | |
| Qy | 5941 | TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG 6000 | |
| Oy Dp | 6001 | GIGGCAATCAAAGGCITITAACITGCITITICIGITITAGAGCCCTCACCGTCIGGCACCC 6060 | |
| Qy Db | 6061 | GUGTITIGECGICALCITCITCATIGAATIT 612 | |
| γο | 6121 | ATAATATTAAGGAAGAGGAGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 618 | |
| δλ | 6181 | AGTACCTCTGCCCCAGGGCACAGTGGAAGAGGGGGAAGAGGGGATCTGGCATCCATGGG 624 | |
| Op | 6181 | 24 | |
| Q.y D.b | 6241 | AAGCATTTTCTCATTTATATTCTTTGGGACACCAGCAGCTCCCTGGGAGACAGAAAAT 6300 | |
| Qy Db | 6301 | TCTAATTCAACAACATCTTCAGAGCACCTACTAT 6 | |
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| Qy Db | 6361 6361 | TITGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT 6420 |
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| Qy Dp | 6421 6421 | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG 6480 |
| Qy Dp | 6481 6481 | ACCCATGAGGTCCTAAAGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG 6540 |
| Qy Db | 6541 6541 | ITGAAGGAGAAGCTGGAITCCA 660 |
| Qy Db | 6601 | SATGATGGGAGGTCTACACAGACGAGCAACCATGCCAAGTAGGA 666 |
| Qy Db | 6661 | AAGGCATACTGGGAGATTAGAAATAATTACTGTACCCTTAACCCTGAGTTTGCGT 67 |
| Qy Dp | 6721 6721 | CAATTATGCATTTCTACCCCCTGAACATCTGTGGGGGTGTAGGGAAAAGA 678 |
| Qy Dp | 6781 6781 | GTCCAAGGGTCTTTTGGGATATTGGGTTATGA 684 |
| Qy Dp | 6841 | CCTAAGAAAGGAGACCACGATCTCCCTTATATGGTG 690 |
| Qy Dp | 6901 | AGAAGTTAGATGAGAGGTGAGGAGACCAGTTAGAAAGCCAATAAGCAT 696 |
| Qy Db | 6961 6961 | GGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG 702 |
| Qy | 7021 | Saatgaggaaaataaggaa |
| Qy | 7081 | GGCACTACGTCTTAGCTGAACG 714 |
| Qy | 7141 | GCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA 720 |
| Qy | 7201 | SCTCTTCATGTTTCAGGAGAGTTGAACCTAAACATAGAAATT 726 |
| Qy | 7261 | CGAACTCCTTGATTTTAGCCTTCTCTGTTGATTTCCTCAAAAAGATTTCCCCTT 7 |
| QY | 7321 7321 | |
| Qy | 7381 | TTCCTCCGTCACCTCAGAG 7 |

| A 7500 1 A 7500 | 7560 | 7620 | c 7680 | G 7740 G 7740 | c 7800 | A 7860 | 7920 | 7980 | A 8040 | 7 8100 8100 | c 8160 8160 | C 8220 C 8220 | G 8280 | G 8340 | 1 8400 1 8400 | A 8460 8460 | 852 852 | A 8580 |
|--|--|---|---|---|--|--|--|---|---|---|---|--|---|---|--|--|--|--|
| ACATACACCTATGTCATTTCATTTCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGG | CTTACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT | AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCGTTCAACTTTTCCT | TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCCAAGCCTTGGGGATTCTTC | CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGA | GCACCTGTCCCAGAAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGGTGTTTTTAGG | aggtaggaggcaatatcttgaaaggggtggtgagaggggttttttgtaattggcatg; | AGGIGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT | CCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA | ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGGACTCTTCTGAGCACCTACTT | CATGCATTACTGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCG' | TTCTTTTTAAATGAAGAGAGAGTGAGCCGGGCACGGTGGCTCACGCCTGTAATCC | AGCACTTIGGGAGGCCAAAGCGGGGTGGATCACGAGGTCGGGAGACCATCCTGG | TAACATGGTGAAACCCCCATCTCTAATAAAAATACAAAAATTAGCTGGGCGTGGTGGCA | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAG | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA | CTCCATCTCAAAAAATAAAAATAAAATAAAAATGAAAAAAAA | AAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATC | racatctcagacaccactacattcagtagtttagatgcctagaataaa |
| 7441 7 | 7501 0 | 7561 7 | 7621 | 7681 (| 7741 0 | 7801 / | 7861 7 | 7921 | 7981 1 | 8041 (| 8101 | 8161 / | 8221 | 8281 / | 8341 (8341 (| 8401 (| 8461 | 8521 |
| oy Op | Qy Dp | Qy | Qy Db | Qy Dp | Oy Dp | Oy Db | Oy Dp | Qy Db | Oy Dp | Oy Op | 0y 0p | Oy Db | Qy Db | Qy Db | Oy Db | Oy Db | oy DB. | δy |

8580 8700 8700 8760 8760 8820 8820 8880 8880 8940 8940 9000 0006 0906 9060 9120 9120 9180 9180 9300 9300 9360 9360 9420 9420 9480 9480 9540 9540 9600 9600 0996 ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG AGAGTCTTAATATATATATCCAGATGGCATGTTTACTTTATGTTACTACATGCACTTG AGTAGCTGGGATTACAGGCGTGCACCATGCCCGGCTAATTTTTGTATTTTTAGTAGA GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACTCTCGTGATCCGCC GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTTCTT GAAGGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC GAAGGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCTTCCTTTAAAAGTC TTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGG TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGGTTCCGGTGCACATTAAAAAA AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA 8941 9001 9001 1906 9061 9121 9181 9241 9241 9301 9361 9421 9541 9541 1096 8581 8641 8641 8701 8701 8761 8761 8821 8821 8881 8881 8941 9121 9181 9301 9361 9421 9481 9481 8521 8581 Db g Pp qq g Db qq QQ g qq g g δλ g QY Qγ g g οy D q ò QΥ Óγ g ΟŽ QY Ω δý δý Qγ Qγ Qγ Qγ Q δý

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| ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTTAAGCCAG | GTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGC | | TATACTITAATAAAGGTATATGTATTGTATACTGCATGATTTTATTGAAGTTCTGTTC |)TTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGGGTAGCCGAATTAATCGTGTT | CTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTACCACAAAC | CATTCTGAAAGCATATGACAAATTATTCTCTCTTAATATCTTACTAATAGCAGA | TGCTATAAGGCTTCACTTACTCTTCTACCTCATAAGGAATATGTTACAATTAATT | AGGTAAGCATTTGTTTTATATTGGTTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC | CAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT | GTTAATTTTTTAATAGAAATTTTAAGGTCCTCATTTTCTTTC | TITITCIGGCTITAITCATAAAITCITAAGGTCAACTACATITGAAAAAICAAAGACCTG | CATTTTAAATTCTTATTCACCTCTGGCAAAACCATTCACAAACCATGGTAGTAAGGGAA | GGGTGACACTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG | CGCTGAGGGTTTTCCTGAAGGTAAAGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA | ATCACTTGTAGAGAAAGCCCCGGAAAATTTGAGAAAACAAGAAGAAGAAACTACTTACCAG | | AAGGAAACAACACTCTGATAATCATTGAGTCAAGTACAGGGGGGGTTTGAGGACTGC | |
| 9601 A | 9661 T | 9661 T | 9721 T. 9721 T. | 9781 ATC 9781 ATC | 9841 C | 9901 TC 9901 TC | 961 C 961 C | .0021 CT | .0081 AC | .0141 CC | 0201 G 0201 G | 0261 | 0321 | 0381 GC 0381 GC | 0441 | 0501 | 0561 0561 | 0621 0621 | 0681 TG 0681 TG |
| , q | Qγ | qq | Qy | Qy Db | Qy Db | oy Op | Q.y | P | 0y 1 Db 1 | Oy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 | Qy 1 Db 1 |

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1 (bases 1 to 10825)
Thomas,W.J., Drayna,D.T., Feder,J.N., Gnirke,A., Ruddy,D.,
Tsuchihashi,Z. and Wolff,R.K.
Method for determining the presence or absence of a hereditary
hemochromatosis gene mutation
Patent: US 6228594-A 3 08-MAY-2001;
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Pred. No. 0;
0; Mismatches
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Sequence 3 from patent US 6228594.
AR149460.1 GI:15114051
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                                              10801 TAAAATCCCCAAATTTTTCATAAAC 10825
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2400 2640 2700 2760 2340 2400 2460 2640 2700 2160 2160 2220 2100 2100 1740 2040 GCTGGGTGTGGTGCACCTGTGATCCTAGCTACTCGGGAGGTGAGGTGGAGGGTA AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCAAGGAAGCTGTTACACAGTCCAGGCAAG AGGTAGTGGAGTGGGCTGGGTACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGGACATGAAGGA AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA

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| qq | 2701 | GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA 2760 | |
| QQ Dp | 2761 | TIGCTICAGCCCAGGAAGTIGAGGCTGCAGTGAGCCAIGACTGIGCCACTGTACTICAGC 2820 | |
| Qy Db | 2821 | CTAGGTGACAGAGCAAGACCCTGTCTCCCCTGACCCCCTGAAAAGAGAGAG | |
| Qy Dp | 2881 | TGACTTTGTTCTTTATTTTATTTTATGCCTGAGCAGTGGGGTAATTGGCAATGCCAT 2940 | |
| Qy Db | 2941 | TTCTGAGATGGTGAAGGCAGAGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG 3000 | |
| QY | 3001 | GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT 3060 | |
| Qy Db | 3061 | CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT 3120 | |
| QV Dp | 3121 | TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA 3180 | |
| Qy Db | 3181 | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCCT 3240 | |
| Qy Db | 3241 | ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAATCCCTTGAACCCAGGAGGTGCAGG 3300 | |
| Qy Dp | 3301 | TIGCAGIGAGCIGAGAITGIGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT 3360 | |
| Qy | 3361 3361 | CTCAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG 3420 | |
| Qy | 3421 | TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACCTTAAC 3480 | |
| Qy Dp | 3481 | ATTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 3540 | |
| Qy Dp | 3541 3541 | CTGGGGGCAGTGAGGGGGTGGCACGTGTGGCAGAGAAAGCACACAAGGAAAGAC 3600 | |
| Qy Db | 3601 | ACCCAGGACTGTCATATGGAAGAAGAAGACTGCAACTCACCCTTCACAAAATGAGGA 3660 | |
| Qy | 3661 | CCAGACACAGCTGATGGTATGAGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCCC 3720 | |
| Qy Db | 3721 3721 | CICCIACIACACATGGITAAGGCCIGITGCICIGICICCAGGITCACACICICIGGACIA 3780 | |
| QY | 3781 3781 | CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGGTA 3840 | |
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| qq | 7081 | CTITCCIGGGICTCTIGICICCACAGAGGAGCCATGGGGCACTACGICTTAGCTGAACG 7140 |
| Qγ | 7141 | TGAGTGACACGCGGCGTGCAGACTCACTGTGGGAAGGACACAAAACTAGAGACTCAAAAG |
| qq | 7141 | TGAGTGACACGCAGCCT |
| Qy Db | 7201 | GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGTTGAACCTAAACATAGAAATT 7260 |
| QY | 7261 | GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAGATTCCCCAT 732 |
| ď | , (i | TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACTCTCCCCTGG |
| qq | 7321 | 38 |
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| a (| ָרָ מ | ICATGAACCICAAGCIGCAICTAGAGGCTICCTICATTICCICCGTCACCICAGAG 744 |
| ογ Dp | 7441 | ACATACACCTATGTCATTTCTATTTTGGAAGAGCTCCTTAAATTTGGGGGA 7500 |
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| 3 | 2 | LATGATTCATTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGG |
| Qy | 7561 | AACCTTACCAGATTITTACACAIGTAICTAIGCAITITCIGGACCCGITCAACTITICCI 7620 |
| δy | 7621 | SAATCCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTT |
| Op | 7621 | 00 |
| Qy Dp | 7681 7681 | CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG 7740 |
| οy | 7741 | TCATGGCTATCTGTGGGTAGTATGGGTGTTTTTAG |
| qq | 7741 | CTGTCCCAGAAAAGCATCATGGCTAT |
| QY Dp | 7801 | AGGTACGAGCAAATAICITCAAAGGGGITGIGAAGAGGTGITITITCIAAITGGCAIGA 7860 |
| Qy | 7861 | 3TGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT 792 |
| qq | 7861 | 92 |
| Qy Dp | 7921 | TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCTGTTCTGATAATGAAA 7980 |
| δ d | | 04 |
| 3 | TOA | algalaaggalgalaaaagcaciitaciitcgigiccgacictictgagcacctacti |
| Qy Dp | 8041 | CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT 8100 |
| Qy Db | 8101 | TTCTTTTTTAAATGAAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC 8160 |
| yo d | 8161 | AGGAGATCGAGACCATCCTGGC 822 |
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Thomas,W.J., Drayna,D.T., Feder,J.N.,
Tsuchihashi,Z. and Wolff,R.K.
Method for determining the presence or
hemochromatosis gene mutation
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| . 181 | 241 | | 301 | 361 | 421 | 481 | 541 541 | 601 | 661 | 721 | 781 | 841 | 901 | 961 | 1021 | 1081 | 1141 | 1201 | 1261 |
| ٠. ج | o y | g Q | QY Db | Qy Dp | Qy Db | Qy Db | Oy Db | Qy Dp | QY Dp | QY Db | QY Db | Qy Db | Qy Db | Qy Dp | Qy Dp | Qy Db | Qy Dp | 0y Db | οy |

2040 1440 1740 1980 2040 2160 2160 2220 2220 2280 2340 2400 1380 1440 1500 1500 1560 1560 1620 1620 1680 1680 1740 1800 1800 1860 1860 1920 1920 1980 2100 2100 2280 2400 AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAAACCAAAAATGTCCT AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGAGA GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAAGCAGAATG CAAGGGAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA CGGCGTGGGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGGTCTTGACAACCAAAAATGTCTCT **ATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG** CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC <u> AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC</u> GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA 1441 1441 1501 1561 1561 1621 1621 1681 1681 1741 1741 1801 1801 1861 1861 1921 1921 1981 1981 2041 2041 2101 2101 2161 2161 2221 2221 2281 2281 2341 2341 1321 1381 1501 1381 1321 Q Op qq qq QQ q Pp δ Op g q Q qq ΩĐ g Pp Q QYOb QΥ QY δý QΥ Qγ Ω g ζ Ω QY δý Óλ δž οy οy Ω Q

| 2460 2460 2520 2520 2580 2580 | 4 4 0 0 | 7 7 8 8 | 88 8 | 9 4 6 | 3000 | 3060 | 175 | 3180 3180 | 3240 | 3300 | 3360 | 3420 | 3480 | 3540 |
|---|---|--|--|---|--|-------|---|--|---|--|--|--|---|--|
| AAGGGAGCAACAGTAAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG | TIGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGGAGCAGATTCCTGAGCTCA | GCTGGGTGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGTGGAGGTGGAGGTGGAGGTGCGGGGGGTGGGGGGGG | CTAGGTGACAGAGCAAGACCCTGTCTCCCCTGACCCTGAAAAGAGAGAAGAGTTAAAG | TGACTTTGTTCTTTATTTTAATTTTATGCCTGACCAGTGGGGTAATTGCCAATGGCAATGCCAGTGTTGTTTTTTTT | TTCTGAGATGGTGAAGCCAGAGGAAAGGCAGTTTGGGGTAAATCAAGGATTTGCATTTTGTGAGTAAATCAAGGATTTGCATTTTTTTGTGTAAATCAAGGATTTGCATTTTTTGTGGTAAATTCAAGGCAGAAAGAGCAGTTTGGGGTAAATCAAGGATTTTGCATTTTGGGGTAAATTGAAGATTCTGCATTTTGGAAGTGATTGAGATTCCAGTCAGGCTTCCAAGTGAAGTGTAAAGTTGAGGCTTCCAGTCCAGTGGAGGCCACATAGGCAGT | | CADIGITANGANITCAGGACCAAGGCIGGGCACGGTGGCTCACTICGTAATCCAGGCACGGTGGCTCACTTCTGTAATCCAGGACCAAGGCTGGCACGGTGGCTCACTTCTGTAATCCAGCACGGCACGGTGGCTCACTTCTGTAATCCAGCACG | . TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCT | ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG | 1 TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGACTCTGT | 1 CTCAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG | 1 TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACTTAAC | 1 ATTTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT |
| 2401 2401 2461 2461 2521 | 58 58 | 2701 2701 2701 2761 2761 | 82 | 88 | 2941 2941 3001 | 00 | ف ف | 3121 | 3181 | 3241 | 3301 | 3361 | 3421 | 3481 |
| 00 do | දු වූ වූ දු | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Oy Db | Qy | QQ O | 2 8 2 | o do | Qy Dp | Qy Dp | Qy Dp | Qy Db | Qy Dp | Oy Ob | Qy |

4440 4500 4440 4500 4560 4620 4200 4260 4260 4320 4320 4380 4380 4080 4140 4200 3900 3960 3540 3720 3780 AGGTTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGTCTC TGGCCCACCAAGCTGGAAAAGGCACAAGATTCGGGCCAGGCAGAACAGGGCCTAC CTGGAGAGGGACTGCCCTGCACAGCTGCAGTTGCTGGAGCTGGGGAGAGGTGTTTTG GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC GAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCTG CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGCACTA CICCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTGCACATA CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG 4441 4441 4501 4381 4381 4501 4561 3961 4081 4081 4201 3901 4021 4021 4141 3841 3901 3961 3541 3601 3661 3721 3721 3781 3781 3841 3481 3541 3601 3661 g g g δ g ò Db qq Qy q οy g δ δŽ qq QΥ QQ οy g οy рp δy q δ g Qγ qq οy P QΥ Ω q Ω QΥ

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| q G | 4561 | AGGITGCAGGCACGCAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC | 4620 |
| Qy | 4621 | TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA | 4680 |
| Dp | | | 4680 |
| oy oy | 4681 | TGAGACACCACAAGTCATGGGTTTAATTTCTTTTCCCATGCATATGGCTCAAAGGGAA | 4740 |
| Qy | 4741 | GIGTCTATGGCCCTTGCTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA | 4800 |
| Qy | 4801 | AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG | 4860 |
| Db | | | 4860 |
| oy | 4861 | AGGCCGAGGCGGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA | 4920 |
| Op | | | 4920 |
| Qy Db | 4921 | ACCGTCTCTAAAAAATACAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA | 4980 4980 |
| Qy | 4981 | GCTAATTGGAAGGCTGAGGCAGGATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA | 5040 |
| Db | | | 5040 |
| QY Db | 5041 | GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGAGAGAG | 5100 5100 |
| Qy | 5101 | aaaaaaaaaaaaaaaaagagaattcagagatctcagctatcatgatgattactagacagac | 5160 |
| Db | 5101 | | 5160 |
| Oy Dp | 5161 | ATATCAGTGAGGCCACTTATCAGAGTAGAAGAATCCTTTAGGTTAAAAGTTTCTTTC | 5220 5220 |
| Qy | 5221 | AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC | 5280 |
| Db | 5221 | | 5280 |
| Qy | 5281 | CICCTAGGITGACCCAGGIGAACTGACCATCTGTATTCAATCATTTTCAATGCACATAA | 5340 |
| Db | 5281 | | 5340 |
| Oy | 5341 | AGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACAGATATGTATTACATGTG | 5400 |
| Dp | | | 5400 |
| QY | 5401 | AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG | 5460 |
| DD | | | 5460 |
| Qy Dp | 5461 | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTTCTGAAAAGGGTATTTCCTTCC | 5520 5520 |
| QY | 5521 5521 | AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC | 5580 5580 |
| Qy | 5581 5581 | CTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACATCATGTGACCCTTTTTTTT | 5640 5640 |
| Qy | 5641 | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACCCCCGGGACATCACCATG | 5700 |
| Dp | | | 5700 |

0009 6120 6180 6180 6240 6240 6300 6360 6360 6420 6480 6480 6540 6540 0099 0099 6720 5820 5880 5940 5940 0009 0909 0909 6120 AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGGAAAGA 6780 5880 TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG ACCCCATGAGGTCCTAAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG CAGAGATATACGINCCAGGIGGAGCACCCAGGCCIGGAICAGCCCCTCATIGIGAICTGG GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGGTTGAGAGGAGTGCC TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT TGTTCATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT TAGTACCTCTGCCCCAGGGCACAGTGGGAAGGGGGCCAGAGGGGGATCTGGCATCCATGGG AAGCATTTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAGAAAAT AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTAAT ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 6301 6361 6241 6241 6301 6421 6421 6481 6481 6541 6721 5941 5941 6001 6061 6121 6121 6181 6541 6601 6601 6661 6661 5701 5701 5761 5761 5821 5821 5881 5881 6001 6061 6361 6721 Q g QΥ dd QΥ g QΥ qq ΩY Op QΥ QQ QΥ g Qy Db ΩŊ QQ Qγ Dβ οy Db Qy g QΥ QQ òχ g QY Q QΥ Db Ω g δy Óγ

| CTTTTGGGATATTGGGTTATGA 6840 | CACGATCTCCTTATATGGTG 6900 | agtiagaaagccaataagcar 6960 | TIGCCCAGGTCTAAATTGAGATGG 7020 | GIGCCTAGGITIGGAGGCT 7080 | SGGGCACTACGTCTTAGCTGAACG 7140 | SAAGGAGACAAAACTAGAGACTCAAAGA 7200 | STTGAACCTAAACATAGAAATT 7260 | TCATTTCCTCAAAAGATTTCCCCAT 7320 | GTGACCTCTCCCTGGAACTG 7380 | CATITICTCCCCTCACAG 7440 | GGACTCCTTAAATTTGGGGGA 7500 | OCCTGGGACGTGGCTAGTCAT 7560 | TTCTGGACCCGTTCAACTTTCCT 7620 | CACCAAGCCTTGGGATTCTTC 7680 | GTACACTGCACGAATGGAAGAG 7740 | GTAGTATGATGGTGTTTTAGC | STGTTTTTCTAATTGGCATGA 7860 | ATTIGGGAIGCIACICIAGIAI 7920 |
|--|---|--|--|---|--|--|--|--|--|---|---|---|--|---|---|---|---|-----------------------------|
| GAATCAGAAAGAGCCAGCTCATACAGAGTCCAAGGT | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCZ | aatgtgttgttaagaagttagatgagaggtgaggagacoagttaga | ttccagatgagagataatggttcttgaaatccaatagi | GTGAATGAGGAAATAAGGAAGAGAGAGAGAGCAAGATGGTC | CTTTCCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGG | TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGA | GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGT | GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCAT | TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTC | TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTT(| ACATACACCTATGTCATTTCATTTCCTATTTTTGGAAGAGGAC | CTTACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACC | AACCTTACCAGATTTTTACACATGTATCTATGCATTTT | TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTV | CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTC | GCACCTGTCCCAGAAAAGCATCATGGCTATCTGTGGC | AGGTAGGAGGCAAATATCTTGAAAGGGGTTGTGAGAGAGGTGT | STGTCATACAGATTTGCA |
| 6781 (6781 (| 6841 | 6901 | 6961 | 7021 0 | 7081 | 7141 | 7201 | 7261 | 7321 | 7381 7381 | 7441 | 7501 | 7561 | 7621 | 7681 | 7741 | , 7801 7801 | 86 |
| Oy Dp | oy D | Qy Db | Oy Db | Oy Db | Qy Dp | oy Op | Qy Dp | Qy Db | Oy Dp | Oy Db | Q Dp | Qy Dp | Oy Dp | Oy Dp | O.y | Qy Dp | OY Db. | οy |

8820 8880 8880 8940 8940 8520 8580 8640 8640 8700 8700 8760 8760 8820 GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACTTAAAAA 9000 8280 8280 8340 8400 8400 8460 8460 8520 8580 8160 8160 8220 8100 8100 GAAGGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC CCIGAAGGAAGGICCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCATTCA CCTCAATGAAGTGGAGTAAGCTCTCTTTTTTTGAGATGGTATAATGGAAGCCACCAAGTG CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 8761 TITCITIGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGG TTCTTTTTTAAATGAAAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC TAACATGGTGAAACCCCATCTCTAATAAAATACAAAAATTAGCTGGGCGTGGTGGCAG CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGTGAGA AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 8761 8881 8941 8701 8821 8821 8881 8341 8401 8401 8521 8521 8581 8581 8641 8161 8221 8281 8281 8341 8041 8101 8101 8161 8221 7921 7981 7981 8041 7861 7921 q g g Óγ Op g Ωý В QΥ g QΥ g QΥ Qγ Db qq q QΥ g ŏ g QY Ωp Ωý g QΥ Dp οŽ qq ò Db Ω δ δ δy

us-09-497-957-1.rge

| . qq | 8941 | GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA | 0006 |
|----------|--------------|---|----------------|
| Oy Ob | 9001 | AAAATCTAACCAGGACATTCAGGAATTGCTACATTCTGGGAAATCAGTTCACCATGTTCA | 9060 |
| QV Db | 9061 | AAAGAGTCTTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGATAAAGAGTCTTTTTTTT | 9120 9120 |
| Qy Dp | 9121 | CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA | 9180 9180 |
| Qy Db | 9181 | AGTAGCTGGGATTACAGGCGTGCACCACCACGCCGCTAATTTTTGTATTTTTGGATAGA | 9240 9240 |
| QY | 9241 | GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC | 9300 |
| Qy Dp | 9301 | TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCGTCAAA | 9360 9360 |
| δ S | 9361 9361 | AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG | 9420 9420 |
| Qy Dp | 9421 | GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT | 9480 9480 |
| Qy Dp | 9481 | ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTCTTCTT | 9540 9540 |
| Qy | 9541 9541 | TTAAACCATTTTCTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAGTAAAGTGTGATTT | 9600 |
| 0y Db | 9601 | ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG | 9660 |
| Qy Db | 9661 9661 | TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA | 9720 9720 |
| Qy Db | 9721 | TATACTITAATAAAIGTATATIGTATIGTATACTGCATGATTITATIGAAGTICTTGTIC [[| 9780 9780 |
| Qy | 9781 9781 | ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | 9840 9840 |
| Qy | 9841 | CTTTACATTTTGTCTTACGGAATATTTCATTCAACTGTGGGTAGCCGAATTAATCGTGTT [| 0066 |
| QY Db | 9901 | TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC | 0966 |
| Qy Db | 9961 | CATTCTGAAAGCATATGACAAATTATTTCTCTCTTAATATCTTACTATACTGAAAGCAGA | 10020 10020 |
| Qy Db | 10021 | CIGCTATAAGGCTTCACCTTACTCTTCTACCTCATAAGGAATATGTTACAATTAATT | 10080 10080 |
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PAT 08-AUG-2001
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10741 CAGTATTTTATAAAAACATTCTTCACAAACTCACACACATTTAAAAACAAAACACTGTCTC 10800
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Unclassified.

Unclassified.

In Chases I to 10825)

RS Thomas,W.J., Drayna,D.T., Feder,J.N., Gnirke,A., Ruddy,D.,

Tsuchihashi,Z. and Wolff,R.K.

Method for determining the presence or absence of a hereditar hemochromatosis gene mutation

NAL Patent: 08 622894-A 7 08-MAY-2001;

ES Location/Qualifiers

1. 10825

Organism="unknown"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          or absence of a hereditary
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                                                                                                                                                                                                  GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG
                                                                                                                                                                                                                                                                                CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAAATGGGTGGAGGGGCGTGCACTGGAA
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                                                          GITAATTITITIAATAGAAATITITAAGTCCTCATTITCTTTCGGTGTTTTTTAAGCTTTAA
                                                                                                      TTTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG
                                              CCAGICITCACAGIAACACAITICACIAACACAITIACIAAACAICAGCAACIGIGGCCI
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Sequence 7 from patent US 6228594.
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| BASE C | (n H | |
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| Quer Best Matc | uery Match 100.0%; Score 10823 est Local Similarity 100.0%; Pred. No. 0 atches 10823; Conservative 0; Mismatch | 3; DB 6; Length 10825;); nes 2; Indels 0; Gaps 0; |
| Oy Op | QY 1 TCTAAGGTTGAGATAAAATTTTAAATGTATGATTGAATTTTGAAAATCATAAATTTT | AAATTTTGAAAATCATAAATATTA 60 |
| Oy Db | OY 61 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCT | ACTITCCCCAATCAACACCCT 120 |
| Oy Db | OY 121 TCAGGATTTAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT DD 121 TCAGGATTTAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT | TAGTGTTTCACAAGCAGGTACCTT 180 |
| Qy | 181 | ACCIGITGCITITCACCAGGAAGII 240 |
| Qy Db | OY 241 TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCCG D 241 TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCCG | AGGGTAACTTCTGGAGCCATCCCCG 300 |
| Qy | OY 301 TTTCCCGCCCCCCAAAAGAAGGGGAGATTAAAGGGGGAGGTGCGGCCAGAGCTGGGGAAA | GGGACGTGCGCCAGAGCTGCGGAA 360 |
| oy G | Oy 361 ATGGGCCCGCGAGCCGGCGCTTCTCCTCCTGATGCTTTTGCAGACCGCGGTCCTG | GATGCTTTTGCAGACCGCGGTCCTG 420 |
| oy Dp | Oy 421 CAGGGGCGCTTGCTGCGTGAGTCCGAGGGCTGCGGGCGAACTAGGGCGCGCGC | GCGAACTAGGGGCGGGGGGGGGGGGGGGGGGGGGGGGGG |
| oy op | OY 481 GAAAAATCGAAACTAGCTTTTCTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC | AGTITGCTAACTITGGAGGACCTGC 540 |
| දු පු | OY 541 TCAACCCTATCGGCAAGCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGC | GCGTCCAGACCCGTGAGGGAGTGC 600 |
| Oy Dp | 601 C 601 C | AGGACCTGCCCCTCCCCGGCTGT 660 |
| Oy Op | Qy 661 CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT | TCCCTTCCCCCAACTAGAATGCTTT 720 |
| oy D | Oy 721 TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTTAAGCCTGGGGCTCCTTGAACCTGG | TAAGCCTGGGGCTCCTTGAACCTGG 780 |
| Qy | Qy 781 AACTGGGGTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG | TITICCCCAGICATCICCAAACAGG 840 |
| Oy Db | OY 841 AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGAGGATCCGCACGCA | CCAAACCCACAGGATCCGCACG 900 |
| 9 | Qy 901 GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGCCGCGAAACAGTGGCGTTGGGGA . | GGGCGCGAAAGAGTGGCGTTGGGA 960 |
| ٥٨ | 961 TCTGAATTCTTCACCATTCCACCCACTT | TTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT 1020 |

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1 (bases 1 to 246240)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCAGGATTTAAAAACCAAGGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT
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|--|---|---|---|---|--|---|--|---|--|--|--|---|---|--|---|--|---|
| CAAGGGAGAGGGAAACAGTCTTTACCCTTTGATTTTGCATTCTAGTGGGAGAGTGAGGGAAACAGTGGGAGAAGATTAGATTTTGGATTCTAGTGGGAGAGAGA | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGCCTGACACTTGAGCAGAAGAAGAAGAAGAAGAAGAAGAAGTCAGGGCAAGTCACCTTGAGCAAGAAGAAGAAGTCATGAGCAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAGAAG | GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGA AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG | THEGATTAAAAAGGGGGTTTTCTCAGCACTACTCATGTGTGTG | CGGCGTGGGGGTGGGAAGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT | CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCGGTCTTGACAACCAAAAATGTCTCT | AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAA | AATAAACAAGTAGTGGTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA | GCCACAAACAAGGIIGTGCAGGCGCCTGTAGGCTGTGTGTGTGAATTCTAGCCAAGGAGTA | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | AAGGAAGCAACAGTAAAAGCAGGAGCCCAGCAGGAAGCTGTTACACAGTCCAGGCAAG | aggtagtgggggggggggggggggagagaaaagggagtgacaaaccattgctcctgaa | TATATICTGAAGGAAGTIGCTGAAGGATICTATGTTGTGTGAGAGAAAGAGAGAATTGG | CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGGAGCAGATTCCTGAGCTCAGGA | GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAATAAAATTA | GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTA | TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC | CTAGGTGACAGAGCAAGACCCTGTCCCCTGACCCCCTGAAAAGAGAAGAGTTAAAGT |
| AAGGGAG | ATGACAA SATGACAA SAAGCAGAC | SAAGCAGAC ATTAAGAAT | TTGGATTA) | 266C6T66(111111 266C6T66(| CTCCCTA(| AAACTTTG | AATAAACA ATAAACA | SCCACAAA GCCACAAA | ACAGTGAT ACAGTGAT | AAGGGAGC AAGGGAGC | AGGTAGTG AGGTAGTG | TATATTCT TATATTCT | CTGGGTGT | GTTCAAGA GTTCAAGA | GCTGGGTG 111111 GCTGGGTG | TTGCTTGF TTGCTTGF | CTAGGTG |
| 194044 C | 194104 G 1861 G | 194164 G 1921 P 194224 P | | 2041 (| 2101 0 | 2161 1 | 2221 1 | 2281 (| 2341 | 2401 | 2461 | 2521 | 2581 | 2641 | 2701 | 2761 | . 2821 |
| Oy J | Oy O | a & a | | 6 6 8 | Oy Dp | Qy Dp | Oy Dp | Oy Op | ζο qq | Qy Dp | Qy Db | Qy | QY Db | Qy Db | Q Dp | Qy do | δδ. |

Qy 3901 TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGTCTGAGTCTGAA 3960
Db 196204 TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCTGAA 196263 196023 196143 195663 195124 CTAGGTGACAGAGCAAGACCCTGTCTCCCTGACCCCTGAAAAAGAGAAGAGATTAAAGT 195183 195543 195243 3840 3480 ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA 3660 3180 3240 3060 Db 195544 ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG CCAGACACACAGCTGATGGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCCC CICCIACIACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGCACTA CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGGCTA DD 195484 TGGTGAAACCCCATGTCTACTAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACCT ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACCTTAAC TTGGTGGCTGAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA TGGTGAAACCCCCATGTCTACTAAAAATACAAAATTAGCCTGGTGGGGGGGCGCACGCCT TIGCAGIGAGCIGAGAIIGIGCCACIGCACICCAGCCIGGGIGAIAAGAGIGAGACICIGI GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT TTCTGAGATGGTGAAGGCAGAGAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG 3661 3781 3481 195784 195904 3841 3421 195724 Db 195964 3721 Db 196024 Db 196084 196144 195364 3181 3601 2941 195244 3001 195304 3121 195424 3241 3301 2881 195184 3061 qq δŏ QQ qq οy q δŏ Db δŏ δy óγ Qγ g ōλ g Ωp g Q qq ŏ δλ ò Ω ŏ δλ δy QY

| Qy Db | 5041 | GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGTGAGACTCCATCTTAAAAA | 5100 197403 |
|----------|------|--|----------------|
| Oy Db | 5101 | GAGAATTCAGAGATCTCAGCTAT | 5160 197463 |
| QY | 5161 | ATAICAAGTGAGGCCACTTATCAGAGTAGAAGANTCCTTTAGGTTAAAGTTTCTTTCAT | 5220 197523 |
| QV Db | 5221 | AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC [| 2 8 |
| QY Db | 5281 | CTCCTAGGTTGACCCAGGTGAAACTGACATCTGTATTCAATCATTTTCAATGCACATAA [[]][]][]]]]]]]]]]]]]]]]]]]]]]]]]]] | 5340 197643 |
| QY Db | 5341 | AGGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATATTTACATGTG | |
| Qy Db | 5401 | AGGAGAACAAGCTGATCTGACTGGTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG | |
| QY Db | 19 | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTCTGAAAAGGGTATTTCCTTCC | io o |
| QV | 19 | AACCTATAGAAGGAAGTGAAAGTTCCAGCTATCCTGGCAAGGGTAAACAGATCCCCTCTCTCT | |
| Qy Db | 5581 | CTCATCCTTCTCTTTCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC | 5640 197943 |
| QY | 5641 | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG | 5700 198003 |
| Qy Db | 191 | AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG | 5760 198063 |
| oy op | 19 | CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG | 5820 198123 |
| QY | 5821 | CAGAGATATAOGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCCCATTGTGATCTGG | 5880 198183 |
| Qy Db | 5881 | GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAATCTATTGGGGGTTGAGAGAGTGCC | 5940 198243 |
| OY Db | 5941 | TGAGGAGGIAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG | 6000 198303 |
| QY Db | 6001 | SCAATCAAAGCTTTAACTTGCTTTTTCTGTTTTAGAC | 6060 198363 |
| QV | 6061 | STCATTGGAGTCATCAGTGGAATTGCTGTTTTGTGTCGTCATCGTCATCGTCATCGTCATCGTCATCGAATTGCTGTTTTTGTCGTCATCGTGTATCAGTGGAATTGCTGTTTTTGTCGTCATCGTCATCGTCATCGTCATCTGTCATTGTCTCTCTC | 6120 198423 |
| QY | 61 | ITCATAATATTAAGGAAGAGGGGGTTCAAGTGAGTAGGAACAAGGGGGAAAGTCTC | 6180 |

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|--------------|---|---|---|---|--|--|--|--|--|---|--|--|---|--|---|---|---|---|
| qa | o d | Oy QO | Oy Dp | d d | ζς qα | QQ QQ | γο do | oy D | da D | QQ Dp | Oy Dp | Qy Dp | Q _Y | Qy Dp | δλ P | oy Q | ර් යි | ζλ Dp |
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| 83 | 43 | 0 | 63 | 23 | 83 | 43 | 03 | 63 | 0 | 0 | 43 | 03 | 63 | 23 | 83 | 43 | 03 | |
| 1984 | 6240 1985, | 6300 1986 | 6360 | 6420 1987 | 6480 1987 | 6540 | 1989 | 1989 | 6720 1990 | 6780 | 6840 | 6900 | 6960 1992 | 7020 | 7080 | 7140 | 7200 | 7260 |
| ICT | 939 989 | AAT | TAT TAT | TAT TAT | AAG AAG | ATG ATG | CCA C | GGA GGA | CGT | AGA AGA | TGA | GTG GTG | CAT | 166 166 | CCT | GAACG GAACG | AGA | ATT |
| AGTC | CCAT CCAT | AGAA AGAA | CTAC | TGGC | AAAG AAAG | AAGA AAGA | GATT | AGTA | TITG | GAAA | GTTA | TATG | TAAG TAAG | GAGA | GATG | CTGA | TCAP | AGAA |
| | GCAT | AGAC | GCAC | ACTG | AGTI | AGGA IIII | GCTG - 1 | 6000 1111 | TGAG | TAGG | ATTGG | CTTA | SCCAP | AAATI | TTTG1 | STTAG | SAGAC | AACAT |
| AAGG | ATCTO | 71660 1111 | CAGP | AAGTC | AATGT | STCAP | SAGAP SAGAP | ACCA1 | AACCC | 1667 1111 1667 | SGATA SGATA | CTCC | SAAAC | STCTA | raggi I I I I I raggi | ACGTC | ACTAC ACTAC | CCTA |
| I I I I | 36664 1111 36664 |) 1100 1100 1100 1100 1100 1100 1100 11 | ATCT: | rgagi rgagi | AGTAZ - - - | 3GGT(1111 3GGT(| SAAGO SAAGO | AGCA. | CTT | rcre IIII | rttg(| ACGA! | STTA(STTA(| CCAG(| 1600 | CACT | CAAA | TGAA(|
| | TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGG | aagcatttttctcatttatattctttggggacaccagcagctcctgggagacagaaar | AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAAACA | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAAATGTAAAGAAG | ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA | ttaggtgaggttgaagatgatgggaggtctacacagacggagcaaccatgccaagtagga | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT | AGCTATCACTCACCAATTATGCATTTCTACCCCTGAACATCTGTGGTGTAGGGAAAAGA | GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATGATGGT(| AATGTGTTGTTAAGAAGTTAGATGAGAGGTGAGGACCAGTTAGAAAGCCAATAAGAT | TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG | GTGAATGAGGAAAATAAGGAAGAGAGAAGAGGCAAGATGGTGCCTAGGTTTGTGAATGCTGCT | CTTTCCTGGGTCTCTTGTCTCCACAGAGGAGCCATGGGGCACTACGTCTTAGCTGAACA | TGAGTGACACGCAGCCTGCAGACTCACTGTGGAAGGAGACAAAACTAGAGACTCAAAGA | GGGAGTGCATTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT |
| AGTG | 6666 | ACCA(| CAAC | TTTG, | TGAT | AATG | TGGA' IIII TGGA' | ACAG - ACAG | TTAC' TTAC' | CCTG | AAGG AAGG | GGAG GGAG | GGAG GGAG | AATA | CAAG CAAG | CCAT CCAT | GAAG GAAG | GAGA |
| TTCA | AAGA AAGA | GGAC | AATT AATT | 1111 | AAAT | AGCA AGCA | CTTC | CTAC | ATAA ATAA | ACCC ACCC | GTCC | GAAA | GTGA GTGA | ATCC | GAGG GAGG | GGAG | GTGG GTGG | TCAG |
| AGGG | 7666 1111 7666 | 1166 1111 1166 | CTCT | ACAG 1111 ACAG | AATG | AGGA | TAGC | AGGT AGGT | AGAA | 11C1 | CAGA | CTAA | AGAG | TGAA 1111 | AGAA | AGGA IIII | CACT | TGTI |
| 1111 | ACAG | TICI | AAGT AAGT | TAGT | AGGG | AGGC 1111 | AAGA 1111 | 7.000 1111 | GATT | GCAT | CATA | GATC | GATG | TTCI | AGAG | CCAC | GACT GACT | TTCA |
| IIII GAAG | 0555 | TATA | ATGA | AAGG | 1166T | AAGC IIII AAGC | GATC | ATGA | GGGA | TTAT TTAT | AGCT | GAAG | GTTA | AATGG | AAGGA AAGGA | GTCT I I I I | 716C | VGCTC |
| TAAG | 2000 | CALT | CAGA 1111 | GTTT | AATC | CCIP | 11660 1111 | GAAG | TACT | CCAP | AAGCC | CATT | AAGAA HHHH | AGATA | AAAT? | TCT. | CAGCC | PATG! |
| AATA | CTGC | FFTC | 7100 | SAGCT SAGCT | ACCC. | SAGGT IIIII SAGGT | CAGC ICAGC | AGGT. | 466CA | ACTO. | AAAGA IIIII | SGTG | GTT7 | IGAGI I I I I IGAGI | AGGA/ GGA/ | 366T(| CACGC | CATT |
| I I I I | racci | CATT | 36110 1111 | SCAAC SCAAC | CAGA | CCATC | ACAT: | 3GTG2 - - - 3GTG2 | FATAZ FATAZ | ratc. IIII | TCAG! TCAG! | CTGG(| STGT | CAGA | AATG AATG | TCCTC | GTGA(GTGA(| AGTG(|
| 1-1 TGT | TAG - TAG | AAG(| AATC | TTT(TTT | 151 1-151 | ACC - ACC | ATC. | | GAG GAG | | | | | 11-11 11-11 | GTG | | | |
| 98424 | 6181 98484 | 6241 98544 | 6301 98604 | 6361 98664 | 6421 98724 | 6481 98784 | 6541 98844 | 6601 98904 | 6661 98964 | 6721 99024 | 6781 99084 | 6841 | 6901 99204 | 6961 99264 | 7021 | 7081 | 7141 | 7201 |
| Db 19 | Qy Db 15 | Oy Db 19 | 0y Db 15 | 0y Db 19 | 0y Db 19 | 0y Db 15 | 0y Db 15 | 0y Db 19 | 0y Db 19 | 0y 0b 15 | 0y Db 19 | 0y Db 15 | 0y Db 19 | 0y Db 19 | Oy Db 19 | 0y Db 19 | 95 15 15 | · ĸo |
| п | У п | 5 0 | 9 11 | 5 0 | 0 11 | 5 4 | 0 1 | 0 1 | 5 0 | <u> </u> | ∵ ≈ | О П | Ç 1 | ŭ L | ~ - | <u> </u> | . I | Ū |

| qa | 199504 | GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT | 199563 |
|------------------|----------------|---|----------------|
| Qy | 7261 | GCCTGACGAACTCCTTGATTTAGCCTTCTCTGTTCATTCCTCAAAAAGATTTCCCCAT | 7320 |
| Db | 199564 | | 199623 |
| Qy | 7321 | TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG | 7380 |
| Db | 199624 | | 199683 |
| Qy | 7381 | TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCGTCACTAGGTHHHHHHHHHH | 7440 |
| Db | 199684 | | 199743 |
| Oy Db | 7441 | ACATACACCTATGTCATTTCATTTCCTATTTTTGGAAGAGGACTCCTTAAATTTGGGGGA | 7500 199803 |
| QY Db | 7501 | CTTACATGATTCATTTTAACATCTGAGAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT | 7560 199863 |
| Qy | 7561 | AACCITACCAGAITITIACACATGIAICTAIGCAITITICIGGACCGGIICAACITITICI | 7620 |
| Db | 199864 | | 199923 |
| Qy | 7621 | TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC | 7680 |
| Db | 199924 | | 199983 |
| , Q _V | 7681 199984 | CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGATGGAAGGGCTGTACACTGCACGATGGAAGGGCTGTACACTGCACGATGGAAGGAGCTGTACACTGCACGAATGGAAGGAA | 7740 200043 |
| QY Db | 7741 | GCACCTGTCCCAGAAAAGCATCATGGCTATCTGTGGGGTAGTATGATGGTGTTTTTAGC | 7800 200103 |
| Qy | 7801 | AGGTAGGAGGCAAATATCTTGAAAGGGTTGTGAAGAGGTGTTTTTTCTAATTGGCATGA | 7860 |
| Db | 200104 | | 200163 |
| Qy | 7861 | AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT | 7920 |
| Dp | 200164 | | 200223 |
| Qy Db | 7921 | TCCAGACCTGAAGAATCACAATAATTTCTACCTGGTCTCTCCTTGTTCTGATAAAAA | 7980 200283 |
| QY | 7981 | ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA | 8040 |
| Db | 200284 | | 200343 |
| QY Db | 8041 | CATGCATACTGCATCACTTCTACAATAATTCTATCAGATAGGTACTATTATCCCCAT | 8100 200403 |
| Oy | 8101 | TTCTTTTTTAAATGAAAGTGAAGTAGCCGGGCACGGTGGCTCACGCCTGTAATCCC | 8160 |
| Db | | | 200463 |
| Qy | 8161 | AGCACTITGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCTTCTGGC | 8220 |
| Dp | | | 200523 |
| QY | 8221 | TAACATGGTGAAACCCCATCTCTAATAAAAATACAAAAATTAGCTGGGCGTGGTGGCGG | 8280 200583 |
| Qy | 8281 | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGTAATGCATGAACCCAGGAGG | 8340 |
| Db | 200584 | | 200643 |

| | AGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 8400 | Caaaaaaataaaaaataaaaaataaaaaaggaaaaaaaaa | CATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG 8520 | CTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | GGCTCTTCTTGTCTCATTGTGTTTCTTCTGAGTGAGCTTGAATCACAT 8640 | AGCAGAAAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC 8700 | GGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCATTCA 8760 | CCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 8820 | TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC 8880 | GTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG 8940 | TGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAA 9000 | aaaatctaaccaggacattcaggaattgctagattctgggaaatcagttcaccatgttca | TTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCATGGCATGAT 9120 | CACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA 9180 | GGATTACAGGCGTGCACCACCACGCCTAATTTTGTATTTTTAGTAGA 9240 | GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC 9300 | CGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA 9360 | AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATCCACTTG 9420 |
|---|---|--|---|---|---|--|---|---|---|---|--|--|--|--|--|---|--|---|
| | CAGAGCTTGCAGT | CTCCATCT | . TAGAGTATCTCATAGTT | TTTGATACATCT | GGAAGGAGATGGCT GGAAGGAGATGGCT | GAAGGGGAACA(| CCTGAAGGAAGGTC | TTTCTTTGGACCCTACG | | CCTCAATGAAGTGGAGTAAGCT | GCTTAGAGGATGCC | | AAAGAGTCTTT | CTCGGCT CTCGGCT | AGTAGCTG AGTAGCTG | | TGCCT | |
| • | Oy 8341 Db 200644 | Qy 8401 Db 200704 | Qy 8461 Db 200764 | Oy 8521 Db 200824 | Qy 8581 Db 200884 | Qy 8641 Db 200944 | Oy 8701 Db 201004 | Qy 8761 Db 201064 | Oy 8821 Db 201124 | Qy 8881 Db 201184 | Qy 8941 Db 201244 | Qy 9001 Db 201304 | Oy 9061 Db 201364 | Oy 9121 Db 201424 | Oy 9181 Db 201484 | Qy 9241 Db 201544 | Qy 9301 Db 201604 | Oy 9361 Db 201664 |

| Qy | 9421 201724 | GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT | 9480 |
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| QY | 9481 201784 | ACAGCICAGAACITICITITAGGCATTAAATITTAGCAAAGATAICTGTTTTTTTTTT | 9540 201843 |
| QY Db | 9541 201844 | TTAAACCATTTTCTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGATAAGGTGATTT | 9600 201903 |
| QY | 9601 201904 | ACGCTCATTGTAGAAAAGCTATAAAATGAATAAAATAAA | 9660 201963 |
| QY | 9661 201964 | TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA | 9720 202023 |
| Qy Db | 9721 202024 | TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC | 9780 202083 |
| QY | 9781 202084 | ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | 9840 202143 |
| QQ | 9841 202144 | CTTTACATTTTGTCTTACGGAATATTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT | 9900 |
| QY | 9901 | TCTTCACTCTAGGGCACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC | 9960 202263 |
| Qy Db | 9961 202264 | CATTCTGAAAGCATATGACAAATTATTTCTCTCATAATATCTTACTATACTGAAAGCAGA | 10020 202323 |
| Qy | 10021 | CTGCTATAAGCTTCACTTACTCTTCTACCTCATAAGGAATATGTTACAATTAATT | 10080 202383 |
| QY Db | 10081 | AGGTAAGCATTTGTTTTATATTGGTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC | 10140 |
| QY | 10141 | CCAGTCTTCACAGTAACACATTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT | 10200 |
| Qy Db | 10201 | GTTAATTTTTTAATAGAAATTTTAAGTCCTCATTTTCTTTC | 10260 202563 |
| QY Db | 10261 202564 | TTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG | 10320 202623 |
| Qy Db | 10321 202624 | CATTITAAATICTIATICACCICTGGCAAAACCATICACAAACCATGGTAGTAAGGGAA | 10380 202683 |
| Qy Db | 10381 | GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG | 10440 |
| Qy Db | 10441 | CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA | 10500 |
| δŏ | 10501 | ATCACTTGTAGAGAAAAGCCCCTGAAAATTTGAGAAAACAAAACAAGAAACTACTTACCAG | 10560 |

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1 (bases 1 to 246240)

Feder, J. Nathan., Krommal, G. Scott., Lauer, P.M., Ruddy, D.A.,
Thomas, W., Tsuchihashi, Z. and Wolff, R.K.
Megabase transcript map: novel sequences and antibodies the
Patent: US 5872237-A 21 16-FEB-1999;
Location/Qualifiers
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| , 1, 193 | 441 TGTAGCACAGTGTTCTGTGGGTCACACGCGGCCTCACCACACACTTTGGTTTTGGTA 1 | 1500 193803 |
| 1931 | 501 CTACGTGTATCCACATTTACACATGACAAGATGAGGCATGGCACGGCCTGCTTGGT 1 | 1560 193863 |
| 1938 | 561 CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC 1 | 1620 193923 |
| 16 193 | 621 TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG 1 | 1680 193983 |
| 1(193 | 681 AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTGCACTGTTCAAGCCC 1 | 1740 194043 |
| 1. | 741 CAAGGAGAGAGAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA 1 | 1800 194103 |
| 16 194 | 801 GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA 1 | 1860 194163 |
| 18 1947 | 861 GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA 1 | 1920 194223 |
| 1942 | 921 AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG 1 | 1980 194283 |
| 1942 | 981 TTGGATTAAAAAGCGGGTTTTCTCACACTACTCATGTGTGTG | 2040 194343 |
| 2(1943 | 041 CGGCGTGGGGGTGGGAAGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT 2 | 2100 194403 |
| 21 | 101 CCTCCCTACTCACTAGGTGCTAGGAGACTCCCCCAGTCTTGACAACAAAAATGTCTCT 2 | 2160 194463 |
| 21 | 161 AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA 2 | 2220 194523 |
| 22 | 221 AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAAGT | 2280 194583 |
| 22 | 281 GCCACAAACAAGGTTGTGCAGGGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA 2 | 2340 194643 |
| 23 | 341 ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG 2 | 2400 194703 |
| 24 | 401 AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCAGGAAGCTGTTACACAGTCCAGGCAAG 2 | 2460 :94763 |
| 24 1947 | 461 AGGTAGTGGAGTGGGCTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA 2 | 2520 -94823 |
| 2 | 521 TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAGAGAAGAATTGG 2 | 3580 |
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195243 195003 195543 195843 195183 195303 195603 195663 195723 195483 2700 2940 3120 2820 3180 3240 3300 3480 3540 ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA 3660 195064 TIGCTIGAGCCCAGGAAGTIGAGGCTGCAGTAGAGCCATGACTGTGCCACTGTACTTCAGC GCTGGGTGTGGTGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGCAGGGTA TGACTITGTTCTTTATTTAATTTTATTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT TIGGIGGCIGAGGCAGGIAGAICATITGAGGICAGGAGITIGAGACAAGCITGGCCAACA CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGCAGATTCCTGAGCTCAGGA GTTCAAGACCAGCCTGGGCAACACAGCAAAAACCCCTTCTCTACAAAAATACAAAATTA TIGCITGAGCCCAGGAAGTIGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG CTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG ATTITCIAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACCTTAAC 2641 2761 2821 2881 3121 3181 3241 3301 3481 3541 2581 194944 195184 3001 195304 195424 195484 195544 3421 195724 194824 194884 2701 195004 195124 3061 195364 195604 3361 195664 195844 3601 195784 qq q QΥ q qq qq ŏ g qq qq g ò g δλ q qq QQ q g q Op ΩŽ δλ δ δ δy δλ Qγ δλ οy Qχ ŏλ Qγ qq δλ δy

| 4 | 10500 | OE | |
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| 9 | 2020 | AGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCCTTCACAAATGAGGA 19390 | |
| දු දු | 3661 195964 | CCAGACACAGCTGATGGTATGAGTTGATGCAGTGTGTGGAGCCTCAACATCCTGCTCCC 3720 | |
| δ | 3721 | TCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTC | |
| qq | 196024 | CCTACTACACACATGGTTAAAGGCCTGTTGGTCTCTCTGTCTCTCACACTCTCTCT | |
| Qy Db | 3781 196084 | CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAGCTTTGGGCTA 3840 | |
| oy Op | 3841 | CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC 3900 | |
| οy | 3901 | CATGGGTTTCCAGTAGATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGTT | |
| qq | 196204 | CCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCT | |
| Qy Dp | 3961 196264 | AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAATCACAACCACAG 4020 | |
| oy D | 4021 | CAAGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 4080 | |
| Oy Dp | 4081 | atgcatcttgaaggaaacagctggaagtctgaggtcttgtgggaggagggag | |
| Οŷ | 4 | SCTICCIGAGAICAITIGGICCTIGGGGGTGGIGGAAATAGGGACCIAITCCIT 4200 | |
| q | 196444 | | |
| Oy Db | 4201 | TGGTTGCAGTTAACAAGGCTGGGGATTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG 4260 | |
| Oy Dp | 4261 | GGCTGTGAAATGCAAGAAGAACAACAGTACCGAGGGCTACTGGAAGTACGGGTATGATGGC 4320 | |
| Oy Dp | 4321 | CAGGACCACCTIGAATICTGCCCTGACACACTGGATIGGAGAGCAGCAGCAGCAGGGCC 4380 | |
| οy | 438 | 440 | |
| QQ | 89 | GGCCCACCAAGCTGGAAGGCACAAAGATTCGGGCCAGGCAGAACAGGGCCTAC 196° | |
| Oy Dp | 4441 | CTGGAGAGGGACTGCCCTGCACGCTGCAGTTGCTGGAGCTGGGGAGAGGTGTTTTG 4500 | |
| 0.y Db | 4501 196804 | GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG 4560 | |
| Oy Db | 4561 196864 | AGGTTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC 4620 | |
| Qy Dp | 4621 | TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA 4680 | |
| ор О | 4681 | 'IGAGACAGCCACAAGTCATGGGTTTAATTTCTTCCATGCATATGGCTCAAGGGAA 4740 | |
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| 5820 | CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG CTTTTTTTTTT | 5761 | δ δ |
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| 5760 | . AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG | 5701 | Qy |
| 198063 | | 198004 | |
| 5700 | . TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACCACCAGAACATCACCATG | 5641 | Qy |
| 198003 | | 197944 | Db |
| 5640 | CTGTCAAGTGCCTCCTTTGGTGAAGG | 5581 | Qy |
| 197943 | | 197884 | Db |
| 5580 | TGAAAGTTCCAGTCTTCCTGGCA | 5521 | QY |
| 197883 | | 197824 | |
| 5520 | TGCTGTCTCTCTGTAGCTTGTTTTTTCTGAAAAGGGTAT | 5461 | Qy |
| 197823 | | 197764 | Db |
| 5460 | actectctcaagtgacactgtgttagagtcca | 5401 | Qy |
| 197763 | | 197704 | Db |
| 5400 | AGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACAG | 5341 | QY |
| 197703 | | 197644 | |
| 5340 | GTGAAACTGACCATCTGTATTCAATCATTTTCA | 5281 | Oy |
| 197643 | | 197584 | Db |
| 5280 197583 | TTCTTA TTCTTA | 5221 197524 | Qy Db |
| 5220 | CCACTTATCAGACTAGAAGAATCCTTTAGGTTAAAAGTT | 5161 | Qy |
| 197523 | | 197464 | Db |
| 5160 | araaaaaaaaagagaattcagagatctcagctatcatatgatac | 5101 | QY |
| 197463 | | 197404 | Db |
| 5100 | GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGT | 5041 | Qy |
| 197403 | | 197344 | Db |
| 5040 | GCTAATTGGAAGCTGAGGCAGGAGCATCGCTTGAACCT | 4981 | QY |
| 197343 | | 197284 | Db |
| 4980 | GCTGGTCACAGTCATGCGCA | 4921 | QY |
| 197283 | | 197224 | Db |
| 4920 197223 | CAAGGT CAAGGT | 4861 197164 | Qy |
| 4860 | AAATTCAGAAATGTCAAGGCGGGCACGGTGGCTCACCCTGTAATCCCAGCACTTTGGG | 4801 | Qy |
| 197163 | | 197104 | Db |
| 4800 | GTGTCTATGGCCCTTGCTTTTTATTAACCAATAATCTTTTGTATATTTATACCTGTTAA | 4741 | Qy |
| 197103 | | | Dp |

| 880 98183 | 940 98243 | 000 98303 | 060 98363 | 120 98423 | 180 98483 | 240 98543 | 300 98603 | 360 98663 | 420 98723 | 480 98783 | 540 98843 | 600 98903 | 660 98963 | 720 99023 | 780 99083 | 840 99143 | 900 99203 | 096 |
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| . 1 CAGAGATATACGINCCAGGIGGAGCACCCAGGCCTGGATCAGCCCTCATTGTGATCTGG 5 1 | 1 GGTATGTGACTGACAGGAGCAGGAGCTGAGAAATCTATTGGGGGTTGAGAGGGGGG 5 | 1 TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG 6 | 1 GIGGCAATCAAAGGCTTTAACTTGCTTTTTTGAGGCCCTCACCGTCTGGCACC 6 | 1 TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTGTTCATTGGAATTT 6 | 1 TGTTCATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 6 | 1 TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGCCATCCTGGCATCCTGGG 6 | 1 AAGCATTTTTCTCATTTATATTCTTTGGGACACCACCAGCAGCTCCTGGGAGACAGAAAT 6 | 1 AAIGGITCTCCCCAGAAIGAAAGICTCIAAITCAACAACAACATCTCAGAGCACCIACIAT 6 | 1 TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT 6 | 1 TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG 6 | 1 ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAATGCTTAGGGTGTCAAAGGAAAGAATG 6 | 1 ATCACATTCACTGGGGATCAAGATAGCCTTCTGGATCTTGAAGAGAGAG | 1 TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA 6 1111111111111111111111111111111111 | 1 GAGIATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 6 | AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGGAAAGA 6 | 1 GAATCAGAAAGAAGCCAGCTCATACAGAGCCCAAGGGTCTTTTGGGATATTGGGTTATGA 6 | 1 TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATATGGTG 6 | 1 AAIGIGIIGITAAGAAGITAGAIGAGGIGAGGAGACCAGITAGAAAGCCAATAAGCAT 6 |
| Qy 5821 Db 198124 | Oy 5881 Db 198184 | Qy 5941 Db 198244 | у 600. | y 606; b 19836 | Oy 6121 Db 198424 | Qy 6181 Db 198484 | Qy 6241 Db 198544 | Qy 6301 Db 198604 | Qy 6361 Db 198664 | y 642 b 19872 | Qy 6481 Db 198784 | Qy 6541 Db 198844 | Qy 6601 Db 198904 | Qy 6661 Db 198964 | Qy 6721 Db 199024 | Oy 6781 Db 199084 | Oy 6841 Db 199144 | Qy 6901 |
| . O. D | 0 0 | 0 0 | Ø A | o o | 0 0 | σд | 0 0 | σΩ | 0 0 | Ø D | O A | O D | G D | 5 0 | 5 0 | о д | 5 0 | J |

200044 GCACCTGTCCCAGAAAAGCATCATGATCTGTGGGGTAGATGATGGTGTTTTTAGC 200103 199323 GTGAATGAGGAAAATAAGGAAGAGAAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT 199383 199504 GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAATT 199563 199683 199684 TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTCCTCCCGTCACCTCAGAG 199743 199803 199863 199923 199983 200043 200163 200223 200224 TCCAGACCTGAAGAATACACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA 200283 199503 7680 7740 7140 7320 8040 7560 7860 7500 ATTATGATAAGGATGATAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTAATAATAATGATAAGGATTAATAATAATGATAAGAACACTAACTTA TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCCAGGTCTAAATTGAGATGG 199864 AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT 199984 CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG CTTTCCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGGGGCACTACGTCTTAGCTGAACG TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG ACATACACCTATGTCATTTCATTTCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGGA TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATGTGTCACCAAGCCTTGGGGGATTCTTC TIGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCACCTTGGGGATTCTTC CATCTGATTGTGATGTGGGTTGCACAGCTATGAAGGCTGTACACTGCACGAGTGGAAGGG TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTTGTTCTGATAATGAAA TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAATTTCCCCAT TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG CTTACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT GCACCTGTCCCAGAAAAAGCATCATGGCTATCTGTGGGTAGTATATGATGGGTGTTTTTAGC CTTTCCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGGGGCCACTACGTCTTAGCTGAACG GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT **AACCTTACCAGATTTTTACACATGTATCTATGCATTTTTCTGGACCCGTTCAACTTTTCCT** GTGAATGAGGAAAATAAGGAAGAGAGAGAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT 7081 7141 7381 7441 7501 7561 7681 7741 7861 7921 7981 1969 199324 199384 199444 7201 7261 199564 199624 199744 199804 7621 199924 7801 200104 200164 199204 199264 7021 7321 g ŏ qq g Öλ g δŏ g q δŏ g ò d qq ΩŸ g δŏ g ŏ qq ò g QΥ g δŏ qq δ g ά q οy Dp δŏ Ω ōλ QΥ

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| ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA | CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT [| TTCTTTTTTAAATGAAGAAAGTGAAGTAGGCCGGCACGGTGGCTCACGCCTGTAATCCC | AGCACTITGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC [| TAACATGGTGAAACCCCATCTCTAATAAAAATACAAAAAATTAGCTGGGGGTGGTGGGCG | ACCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGATGGCATGAACCCAGGAGG | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA CAGAGATTGCAGTTGCACTGCAGTTGTGTTTTTTTTTT | CTCCATCTCAAAAAAATAAAAATAAAAATAAAAAATGAAAAAAAA | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG | TTTGATAC TTTGATAC | | GAAGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC | | 1 TTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGCCTGCTGGCCTGCTGGCCTGCTGGCCTAGTGGTGGGGACAGCTAGTGGTGGGGACAGCTAGTGGGGCAAGCAA | 1 TCACACACGGGGTCCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGGGGTATTTC | CCTCAATGAAGTGGAGTAAGCTCTCTCATTTGAGATGGTATAATGGAAGCCACCAAGTG | 1 GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACTAAAAAA | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA | 1 AAAGAGTCTTTTTTTTTTTTTTGGGAGTCTGGGGTGGAGGTGGATGGCATGAT |
| 200284 | 8041 | 8101 200404 | 8161 200464 | 8221 200524 | 8281 200584 | 8341 200644 | 8401 200704 | 8461 | 852 | 8581 200884 | 8641 | 8701 | 876 | 882 | 888 | 894 | 9000 | 906 |
| qa | Qy Db | Qy Dp | QY Db | Oy Db | Qy Db | Oy Db | Oy Dp | Q P | Qy Db | OY Dp | Oy Dp | Qy Db | Oy Dp | QY Db | Qy Dp | S S | Q Q | oy op |

| 9180 201483 | 9240 201543 | 9300 201603 | 9360 201663 | 9420 201723 | 9480 201783 | 9540 201843 | 9600 201903 | 9660 201963 | 9720 202023 | 9780 202083 | 9840 202143 | 9900 202203 | 9960 202263 | 10020 202323 | 10080 202383 | 10140 | 10200 |
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| CTCGGCTCACTGTAACCICTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA | AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTTGTATTTTAGTACA | GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC | TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCGTCAAA | 1 AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG | GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT | A = A | 1 TTAAACCATTTCTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAAGTAATGTCATTT | 1 ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG | 1 TGAAAACTATTAACAACTTGTCTATTACTGTTAGTATTATTGTTGCTTAAAAATGCA | 1 TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC | 1 ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | 1 CTTTACATTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT | 1 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTACCAGCAAAC | 1 CATICTGAAAGCATATGACAAATTATTTCTCTTTAATATCTTACTACTACTGAAAGCAGA | 1 CIGCTATAAGGCTTCACTTACTCTTCTACCTCATAAGGAATATGTTACAATTAATT | 1 AGGTAAGCATTTGTTTTATATTGGTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC | 1 CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCCT |
| 9121 | y 9181 b 201484 | y 9241 b 201544 | 9301 | 936 | 942: | 948 | 954 | 960 | 2y 966: Db 20196 | 2y 972: | y 978: | 2y 984 | 2y 990 Db 20220 | QY 996 Db 20226 | 2y 1002 Db 20232 | Qy 1008 Db 20238 | Qy 1014 Db 20244 |
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Feder, J. Nathan., Kronmal, G. Scott., Lauer,
Thomas, W., Tsuchihashi, Z. and Wolff, K. K.
Megabase transcript map: novel sequences
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TCTAAGGTTGAGATAAAATTTTAAATGTATGATTTGAATTTTGAAAATCATAAATATTTA 192363 192423 192723 192783 192903 192963 193023 193083 193203 193263 240 540 420 900 840 720 780 900 960 193024 TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTGG 193084 AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCCAAACAGG AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT TCAGGATTTAAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT CTGCTGTAGGAGAGAGACTAAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCCG TITCCCCCCCCCCAAAAAAGAAGCGGAGAIITAACGGGGACGIGCGGCCAGAGCIGGGGAA ATGGGCCCGCGAGCCAGGCCGGCGCTTCTCCTCTGATGCTTTTGCAGACCGCGGTCCTG CAGGGGCGCTTGCTGCGTGAGTCCGAGGGCTGCGGGCGAACTAGGGGGCGCGGGGGGTG TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTGG AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGCAGGATCCGCACGG GAAAAATCGAAACTAGCTTTTTTTTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC CTACCACTGAACTGCAGATAGGGGTCCCTCGCCCCAGGACCTGCCCCCTCCCCGGCTGT CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCCTTCCCCCAACTAGAATGCTTT GCTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGCGCGCGAAAGAGTGGCGTTGGGGA GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTTTTCGG TCTGAATTCTTCACCATTCCACCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT GGGAGGCTCCTGAGAGGCCTACCTCGGGCCTTTCCCCCACTCTTGGCAATTGTTCTTTT 241 361 481 61 192364 121 181 192544 301 192664 661 721 192424 192484 192604 421 601 192904 192964 781 841 961 1021 901 193204 193264 193324 1081 a οy δy g 셤 Qγ q qq 셤 g Q δ ŏ ò ò a ŏ g δ g ò QQ ò g ŏ g ŏ ДQ g g g g à δ δy ŏ

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TCTAAGGTTGAGATAAAATTTTTAAATGTATGATTGAATTTTTGAAAATCATAAATTTTA

| 1200 193503 | 1260 193563 | 1320 193623 | 1380 193683 | 1440 193743 | 1500 193803 | 1560 193863 | 1620 193923 | 1680 193983 | 1740 | 1800 194103 | 1860 194163 | 1920 194223 | 1980 194283 | 2040 194343 | 2100 194403 | 2160 194463 | 2220 194523 |
|--|----------------|---|--|--|---|--|--|---|--|---|--|--|--|---|---|---|--|
| CTAGGCTTTATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA | AT — T | TTTTCACTAGGCATAGGGAGGTAGGACTAATAATACGTTTATTTTACTAGAAGTTAACT | GGAATTCAGATTATATAACTCTTTTCAGGTTACAAAGAACATAAATAA | ATGITATITCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG | TGTAGCACAGTGTTCTGTGGGTCACGCCGGCCTCAGCACCAGCACTTTGATTTGGTA | CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG | CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC | TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTCATGTTGAGCAG | AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC | CAAGGAGAGAGCAGGAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA | GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA | AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAACTGAGTGGGCCTGGCAG | 1 TIGGATTAAAAAGGGGGTTTTCTCAGCACTACTCATGTGTGTG | CGGCGTGGGGGTGGGAAGGGGAACTACCATCTGCATGTAGGATGTCTGAGCAGTATCCTGT | CCTCCCTACTCACTAGGGGGGGGGCACTCCCCCAGTCTTGACAACAAAAATGTCTCT | AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA |
| 1141 | 1201 193504 | 1261 193564 | 1321 193624 | 1381 193684 | 1441 | 1501 193804 | 1561 193864 | 1621 193924 | 1681 193984 | 1741 | 1801 | 186 | 192 | 198: | 204 | 210 | .216 |
| Qy Db | Qy Db | Qy Db | Qy Db | 00 do | ç B | oy Ob | Qy Db | Qy Db | 0y 0b | Oy Db | O. O. | Qy Db | Oy Db | oy D | Qy QD | Oy Dp | oy og |

| TAGGTAATGGGCTCAGAAGAGGA 2280 TAGGTAATGGGCTCAGAAGAGGA 194583 | «-« | 0-0 | υ - υ | 4 – 4 | ს — ს | A-A | 4 – 4 | 4-4 | $\circ - \circ$ | e – e | 는 - 는 | დ — დ | ₽ — ₽ | E - E | 4-4 | AGCCTGGTGTGGTGGCGCACGCCT 3240 | õ |
|--|---|---|--|---|---|---|---|---|---|---|---|---|--|---|--|--|---------------------------------------|
| NATAAACAAGTAGTGCTGGGAGTAGAGGCCAAGAAG | SCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTG | NOAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTG | AAGGGAGCAACAGTAAAAGCAGGGGGGCCCAGCCAGGA | NGGTAGTGGAGGGGCTGGGTGGGAACAGAAAAGGA | NATATICTGAAGGAAGTTGCTGAAGGATTCTATGTTG | CTGGGTGTAGTAGCTCATGCCAAGAGGAGGGCCAAGG | STTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTT | GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTAC | TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCA | CTAGGTGACAGAGCAAGACCCTGTCTCCCCTGACCCC | TGACTTTGTTCTTTATTTTAATTTTATTGGCCTGAG(| tictgagatggtgaaggcagaggaagagcagttgg | GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCA | CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTG(| TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGG | 181 TGGTGAAACCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCC | ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAA' |
| 2221 194524 | 2281 | 946 | 9. 2 | 94. | 94 | 2 | 94 | 2 95 | 2 95 | 2 95 | 95 | 2 95 | 3 95 | 3061 | 3121 | 3 | 3241 |
| O.y | Qy | Qy | yo, do | Oy Db | Oy Dp | Qy | QY | Qy Db | Qy | Qy Db | Oy Dp | Oy Db | Qy Db | Qy | Qy Db | Qy | Qy |

| 195663 | 3420 195723 | 3480 195783 | 3540 195843 | 3600 195903 | 3660 195963 | 3720 196023 | 3780 196083 | 3840 196143 | 3900 196203 | 3960 196263 | 4020 196323 | 4080 196383 | 4140 196443 | 4200 196503 | 4260 196563 | 4320 196623 | 4380 196683 | 4440 |
|--------|----------------|---|---|--|---|--|--|--|--|--|---|---|--|--|--|--|--|--|
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| 195604 | 3361 195664 | 3421 195724 | 3481 195784 | 3541 195844 | 3601 195904 | 3661 195964 | 3721 196024 | 3781 | 3841 | 3.901 196204 | 3961 196264 | 4021 196324 | 4081 196384 | 4141 | 4201 196504 | 4261 196564 | 4321 | 4381 |
| , q | Qy Dp | Qy Db | QY Db | QY Db | Oy Db | Qy Db | Qy | Qy Db | Qy Db | QY | QY Db | Qy Dp | Oy Db | oy Db | Qy Db | Oy Db | Qy Db | QY |

TGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGGCAGAACAGGGCCTAC 196743 GACCAACAAGGTATGGTGGAAACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG 4560 196923 197043 197103 197163 197223 197283 197343 197403 197524 AGAACATAGCAATAATCACTGAAGCTACCTACAAAGTCCGCTTCTTATAACAATGC 197583 197643 197523 197763 197703 4800 4860 4980 5040 5100 4740 5160 5280 5400 5340 TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTTCTCCATGCATATGGCTCAAAGGGAA 196984 TGAGACACCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAGGGAA 197044 GIGICLATGGCCCTTGCTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA 197164 AGCCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA 197224 ACCCGTCTCTAAAAAAATACAAAATTAGCTGGTCACAGGTCATGCGCACCTGTAGTCCCA 197284 GCTAATIGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCATGA GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAA AGGTTGCAGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA 4741 GTGTCTATGGCCCTTGCTTTTATTTAACCAATAATCTTTTGTATATTATACCTGTTAA AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCCAGCACTTTGGG ACCCGTCTCTAAAAAATACAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA 4861 AGGCCGAGGCGGGTGACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA AAAAAAAAAAAAAAAAAAAGAGAATTCAGAGATCTCAGCTATCATATGAATACCAGGACAAA AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC CTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCAATCATTTTCAATGCACATAA 4561 196744 4501 196804 196864 4621 196924 196684 4441 4681 4801 4921 5041 5101 5161 5221 5281 5341 5461 4981 197464 197584 197644 197704 197404 5401 q οy Op 염 ð g δy q ŏ q g Qγ ò δλ g δy g ά g ö Dβ ŏ qq pp g g d αq οp QY οy ŏ δλ qq à δλ δ

| TC 5580 | CC 5640 CC 197943 | ATG 5700 ATG 198003 | TG 5760 TG 198063 | AG 5820 AG 198123 | GG 5880 GG 198183 | GCC 5940 GCC 198243 | AGG 6000 | CCC 6060 11 CCC 198363 | TT 6120 TT 198423 | TCT 6180 CT 198483 | GGG 6240 GGG 198543 | AT 6300 AT 198603 | TAT 6360 TAT 198663 | TAT 6420 TAT 198723 | AAG 6480 AAG 198783 | AATG 6540 AATG 198843 | CCA 6600 CCA 198903 |
|-------------------------|------------------------------|---|----------------------------|----------------------------|----------------------------|--|------------------------|---|---|--|--|---|----------------------------------|--------------------------------|---|------------------------------------|--|
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| BAAGTGAAAGTTC | CTTTCCTGTCAAGT | GACCACTTACGGTGTCGG | GAAGGATAAGCAGCCAATG | GGACCTACCAGGG | GTNCCAGGTGGAGCACC | SAGAGCCAGGAG | TTATGGCAGTGAGATGAC | AGGCTTTAACTTGCTTT | AGTCATCAGTGGAATTC | ATTAAGGAAGAGCAGC | CCAGGGCACAGI | CTCATTATATTCTTT | CAGAATGAAAGTCT | CTGTTTAAGGTAGTACAGGGG | CAAATCTGGTAGGGAAT(| GTCCTAAAGCAGGCAG | 99 – 99 |
| AACCTATAGAAGC | CTCATCCTTCCT/ | TCTTCAGTGACC TCTTCAGTGACC | AAGTGGCTGAAC | CCCAATGGGGAT(| CAGAGATATACO | GGTATGTGACTGATC | TGAGGAGGTAATTATG | GTGGCAATCAAAGGC | TAGTCATTGGA TAGTCATTGGA | TGTTCATAATA TGTTCATAATA | TAGTACCTCTGCC TAGTACCTCTGCC | AAGCATTTTC | AATGGTTCTCCCC | TTTGCAAGAGC | TCTCAGAACCC | ACCCCATGAGG | ATCACATTCAGCTC |
| 5521 197824 | 5581 197884 | 5641 | 5701 198004 | 5761 198064 | 5821 198124 | 5881 | 5941 | 6001 | 6061 | 6121 | 6181 198484 | 6241 198544 | 6301 198604 | 6361 198664 | 6421 198724 | 6481 198784 | · 6541. 198844 |
| Qy Dp | \$ a | oy op | ر م م | Oy Dp | 9y Bp | Oy Op | oy Op | Qy QD | oy Pp | oy op | Qy Dp | oy G | Oy Db | Q G | Oy Dp | Q Op | ç, d |

| QY | 6601 | TTAGGTGAGGTTGAAGATGGTGGGAGGTCTACACAGACGGAGCAACATGCCAAGTAGGA | 6660 198963 |
|----------|--------|--|----------------|
| Qy | 6661 | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT | 6720 199023 |
| QY | 6721 | AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGGAAAAGA | 6780 |
| Ub | | | 199083 |
| QY | 6781 | GAATCAGAAAGAAGCACCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA | 6840 |
| Db | | | 199143 |
| QY | 6841 | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGACCACGATCTCCCTTATATGGTG | 6900 199203 |
| OY | 6901 | AATGTGTTGTTAAGAAGTTAGATGAGGGGGGGGACACCAGTTAGAAAGCCAATAAGAT | 6960 |
| Db | | | 199263 |
| Qy | 6961 | TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG | 7020 |
| Db | 199264 | | 199323 |
| O.y | 7021 | GTGAATGAGGAAATAAGGAAGAGAGAGAGAGAGATGGTGCCTAGGTTTGTGATGCT | 7080 |
| Db | | | 199383 |
| QV | 7081 | CTTTCCTGGGTCTCTTGTCTCCACAGGAGCCATGGGGCACTACGTCTTAGCTGAACG | 7140 |
| Ub | | | 199443 |
| Qy | 7141 | TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA | 7200 |
| Db | | | 199503 |
| 9. | 7201 | GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT | 7260 |
| 9. | | | 199563 |
| QY | 7261 | GCCTGACGAACTCCTTGATTTTAGCCTTCTGTTCATTTCCTCAAAAGATTTCCCCAT | 7320 |
| Db | | | 199623 |
| 9 9 | 7321 | TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACTCTCCCCTGGAACTG | 7380 199683 |
| S | 7381 | TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG | 7440 |
| S | | | 199743 |
| Qy Db | 7441 | ACATACACCTATGTCATTTCCTATTTTTGGAAGAGACTCCTTAAATTTGGGGAC | 7500 |
| Q | 19 | CATGATTCATTTTAACATCT | 7560 |
| D | | | 199863 |
| Q Q | 7561 | 5 = 5 | 7620 |
| O.y | 7621 | AATCCTCTCTCTGT | 7680 |
| d & | 76 | TGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAAT | 7740 |

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|----------------|----------------|--|----------------|
| Dβ | 199984 | CATCTGATTGTGATGTGGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG | 200043 |
| Qy Db | 7741 | GCACCTGTCCCAGAAAAGCATCATGGTATCTGTGGGTAGTATGATGGTGGTGTTTTTAGC 7 | 7800 200103 |
| Qy Db | 7801 | AGGTAGGAGGCAAATATCTTGAAAGGGGTTGTGAGAGGTGTTTTTTCTAATTGGCATGA 7 | 7860 200163 |
| Qy Db | 7861 | AGGIGICATACAGAITIGCAAAGIITAAIGGIGCCITCAITIGGGAIGCIACICIAGIAI ; | 7920 200223 |
| Qy Db | 7921 | TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA ; | 7980 200283 |
| O _Y | 7981 | ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA | 8040 200343 |
| Qy Db | 8041 | CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT { | 8100 200403 |
| Qy Db | 8101 | TTCTTTTTTAAATGAAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCTGTAATCCC (| 8160 200463 |
| Qy Db | 8161 | AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCGGGAGATCGAGACCATCCTGGC (| 8220 200523 |
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| Qy Db | 8281 200584 | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG | 8340 200643 |
| Qy Db | 8341 | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA (| 8400 200703 |
| Qy Db | 8401 | CTCCATCTCAAAAAAATAAAAATAAAAATAAAAAATGAAAAAAAA | 8460 200763 |
| Qy Db | 8461 | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAG | 8520 200823 |
| Qy Db | 8521 200824 | TTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | 8580 200883 |
| Oy Db | 8581 200884 | GGAAGGAGATGGCTCTTCTCTTGTCTCATTGTGTTTCTTCTGAGTGAG | 8640 200943 |
| Qy | 8641 200944 | GAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC (| 8700 201003 |
| QY Db | 8701 201004 | CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTTGCCATTCA | 8760 201063 |
| Οÿ | 8761 | TITCITIGGACCCIACGCAAGGACTGIAATIGGTGGGGACAGCTAGTGGCCCTGCTGGGC | 8820 |

201843 Db 202144 CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGGTAGCCGAATTAATCGTGTT 202203 201064 TTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 201123 201243 201423 201543 201663 201783 201903 202083 202143 201303 9420 9480 9540 0096 0996 9720 9840 8940 0006 0906 9120 9180 9240 9300 9360 ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAAGCTGTTATTTAATTAGCCAG CTCGGCTCACTGTACTCTGCCTCCCAGGTTCAAGGGATCTCCCGTGTCTCAGCCTCCCA GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT AGAGTCTTAATATATATATCCAGATGCCATGTGTTTTACTTTATGTTACTACATGCACTTG ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA TATACTTTAATAAATGTATGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTTGTATTTTAGTAGA GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAAATTTTAGCAAAGATATCTCATCTTCTT GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA 9541 1906 1986 9421 9481 9661 9721 8821 8881 8941 9121 9181 201484 9241 9301 201844 9601 9781 9841 201184 201244 9001 201424 201544 201604 201664 201724 201784 201904 201964 202024 201124 201304 201364 qq qq g οp qq qq ŏλ δŏ 염 δλ g qq QQ qq δλ g δŏ Db óλ ŏ δy ŏ Pp Qγ Qγ δ Óγ g οy q Вb qq δλ δy $\delta \gamma$ δ

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                                     Chordata; Craniata; Vertebrata; Euteleostomi; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                               Submitted (14-MAR-1997) Albig W., Georg-August-Universitaet
Goettingen, Blochemie und Molekulare Zellbiologie, Humboldtallee
23, Goettingen, FRG, 37073
Location/Qualifiers
                                                                                       Albig,W., Drabent,B., Burmester,N., Bode,C. and Doenecke,D. The haemochromatosis candidate gene HFE (HLA-H) of man and n located in syntenic regions within the histone gene cluster J. Cell. Biochem. 69 (2), 117-126 (1998)
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3494. .3735
/gene="HFE"
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/gene="HFE"
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5707. .6005
/gene="HFE"
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Albig, W.
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/gene="HFE"
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/gene="HFE"
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1 (bases 1 to 858)
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/gene="HFE"
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/gene="HFE"
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6770. .692
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1548 1668 1788 1848 1020 1080 1140 2088 1260 2148 1320 1380 2268 1440 1500 2208 2388 1740 720 840 900 TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTTGGGGCTCCTTGAACCTGGGGCTCCTTGAACCTGGGGCTCCTTGAACCTGGGGCTCCTTGAACCTGGGGCTCCTTGAACCTGG CTACCACTGAACTGGAGATAGGGGTCCCTCGCCCCAGGACCTGCCCCCTCCCCGGCTGT CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTCCCCCAGTCATCTCCAAACAGG GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGGCGCGAAAGAGTGGCGTTGGGGA AAGTTCTTCCCTGÁGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGGAGGATCCGCACGG GGGAGGCTCCTGAGAGGCCTACCTCGGGCCTTTCCCCCACTCTTGGCAATTGTTCTTTT GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG CTAGGCTTTATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA TAATGAACATGTAAGCAATGCACTCCACTTCTAAGTTACATTCATATCTGATCTTATTTGA TTTTCACTAGGCATAGGGAGGTAGGAGCTAAATACGTTTATTTTACTAGAAGTTAACT ATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG TGTAGCACAGTGTTCTGTGGGTCACGCCGGCCTCAGCACACCACTTTGAGTTTTGGTA CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG CAAATTTATTCAATGGTÄCACTGGGCTTTGGTGGCAGACCTCATGTCTCCACTTCATAGC CAAATTTATTCAATGGTACACGGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAATTTCATGTTGAGCAG 1681 ŏ

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| 3648 TIGCT | 3708 | 3768 | 3828 | 3887 | 3947 | 4007 | 4067 | 3241 | 4187 | 3361 | 4307 | 4367 | 4427 | 4487 | 4547 | 4607 | 3777 4667 3837 | |
|------------|--|---|---|--|--|---|---|---|---|--|--|--|--|---|---|---|--|---|
| qo : | 3 A | ζς Op | ad d | Qy Db | oy Db | ₹ | S 6 6 | A 6 | A da | da ga | AG G | A A | S G S | da da | <u>کہ وا</u> | A 6 6 | da da | qq |
| | 1741 CAAGGGAGAGAGAAACAAGTCTTTACCCTTTGATATTTGCATTCTAGTGGGAGA 1800 | 1801 GATGACAATAAGCAAATGAGCAGAAAGATAATACAACATCAGGAAATCATGGGTGTTGTGA 1860 | 1861 GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGCTGACACTTGAGCAGACATGAAGGA 1920 | 1921 AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG 1980 | 1981 TTGGATTAAAAAGCGGGTTTTCTCAGCACTACTCATGTGTGTG | 2041 CGGCGTGGGGAGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT 2100 | 2101 CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAATGTCTCT 2160 11111111111111111111111111111111111 | 2161 AAACTTTGCCACATGTCACCTAGTAGAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA 2220 1111111111111111111111111111111111 | 2221 AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGA 2280 | 2281 GCCACAACAACAAGGTGGGGGGCCTGTAGGCTGTGGTGAATTCTAGCCAAGGAGTA 2340 | 2341 ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGGAAAGCAGAATG 2400 11111111111111111111111111111111111 | 2401 AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGCTGTTACACAGTCCAGGCAAG 2460 | 2461 AGGTAGTGGAGTGGGTGGGAACAGAAAGGGAGTGACAAACCATTGTCTCCTGAA 2520 | 2521 TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAAGGAAG | 2581 CTGGGTGTAGTGCATGCCAAGGAGGCCAAGGAGAGAGAGA | 2641 GTTCAAGACCAGCCTGGGCAACACAGCAAAAACCCCTTCTCTACAAAAAATTA 2700 | GCTGGGTGTGGTGGACTGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA | 2761 TIGCTIGACCCCAGGAAGTIGAGGCTGCAGTGACCATGACTGTGCCACTGTACTICAGC 2820 |
| qa | Oy Dp | Qy Dp | Qy Dp | Qy Db | Oy Db | Oy Dp | Qy Dp | Qy Db | QY Db | Oy Db | QY Db | Qy Db | Qy Db | Qy Dp | Qy Db | Oy Db | δο qo., | QY |

TGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCC 3896 3536 3776 4666 3836 3476 4426 4606 3060 3120 4006 3180 4126 3300 4186 3360 3416 3596 4486 VIATGGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAATG 3656 TTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC 3707 **ACTAAAAATACAAAATTAGCCTGGTGTGGTGGCGCACGCCT** GAGGCTTAGGTAGGAGAATCCCTTGAACCCCAGGAGGTGCAGG ACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATA GGGGTGGCAGCCACGTGTGGCAGAGAAAAGCACACAAGGAAA VIGGTATGAGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGC GGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGC SCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGG AGAGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG AGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA GTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT AGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACCT CCCTGTCTCCCCTGACCCCCTGAAAAAAAAAAAAGAGTTAAAGT TAATTTTATTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT CCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT

| - | | | | | | | | | | | | | | | | | :: | | | | | <u>-</u> | |
|---|--|---|--|--|---|--|---|---|--|---|--|--|--|---|---|---|--|---|---|---|---|---|---|
| | 3956 4846 | 4016 | 4076 | 4136 5026 | 4196 5086 | 4256 5146 | 4316 5206 | 4376 5266 | 4436 5326 | 4496 5386 | 4556 5446 | 4616 5506 | 4676 5566 | 4736 5626 | 4796 5686 | 4856 5746 | 85 74 91 80 | 85 74 91 80 | 85 74 91 80 | 85 74 91 80 | 85 74 91 80 | 85 74 91 97 | 85 74 91 97 86 |
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| | 3897 G 1 4787 G | 3957 T 4847 T | 4017 A 1 4907 A | 4077 T | 4137 G 5027 G | 4197 C | 4257 C | 4317 T | 4377 G 5267 G | 4437 C 1 5327 C | 4497 T 5387 T | 4557 G 1 5447 G | 4617 CO 1 5507 CO | 4677 T 5567 T | 4737 G 5627 G | 4797 T 5687 T | 797 687 857 | 797 687 857 747 | 797 687 857 747 | 797 687 857 747 | 797 687 857 747 | 797 687 857 747 | 797 687 857 747 917 |
| • | QY Dp | Qy | Qy | QY | Qy | Oy Dp | 9y Dp | QY Dp | 50 Dp | Qy Db | Qy Dp | Qy Db | Qy | Oy Db | Oy Dp | Qy Db | Oy Oy Db | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 6 | 67 G G G G G G G G G G G G G G G G G G G | 6 | 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 |

5636 5816 5876 5936 5996 5516 5576 9699 5756 6824 5156 5216 5276 5336 5396 5456 6344 6404 6464 6524 6644 6704 6884 5984 6044 6104 6164 6224 6284 6584 6057 ACCCTAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGA 6116 6105 TCATAGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAAAA 6285 TGTGAGGAGAACAAGCTGATCTGACTGCTCCCAAGTGACACTGTGTTAGAGTCCAATCT 6465 TCTCCTCATCCTTCCTCTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATGATGA AGAGCAGAGATATACGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGAT CTGGGGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGGTTGAGAGGAG CTGAGCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAA AAAAAAAAAAAAAAAAAAAAAAAAAAATTCAGAGATCTCAGCTATCATATGAATACCAGGA TCATAGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACA ATGCCTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCAATCATTTTCAATGCAC TGTGAGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCT TAGGACACAAAAIGGIGICICCICIGIAGCIIGIITITITICIGAAAAGGGIAIITCCTIC TAGGACACAAAAATGGTGTCTCCCTGTAGCTTGTTTTTTTCTGAAAAGGGTATTTCCTTC TCTCCTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGT GACCTCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCCAGAACATCAC ATTGCCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCGGGGGA TGCCTGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCT 6585 6645 6929 6825 5817 6705 5877 6165 6345 6525 5937 4977 5867 5037 5927 5097 5985 5217 5277 5397 5457 5577 5637 5697 5757 q g Dβ QΥ g δ pp QY Db QΥ Ω QY Db QΥ g Ω Dp Qγ qq Ωÿ Dp ΩY οqα δy Dβ δy ρp ρ D ρy g QY q δ QΥ Ω δy

| 7004 | 6176 7064 | 6236 7124 | 6296 | 6356 | 6416 7304 | 6476 7364 | 6536 7424 | 6596 | 6656 7544 | 6716 7604 | 6776 7664 | 6836 | 6896 | 6956 | 7016 | 7076 | 7136 | 7196 |
|------|---|---|---|--|--|---|---|--|---|--|--|--|--|--|--|---|--|---|
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| 6945 | 6117 | 6177 | 6237 | 6297 7185 | 6357 | 6417 | 6477 7365 | 6537 7425 | 6597 7485 | 6657 7545 | 6717 7605 | 6777 7665 | 6837 | 6897 7785 | 6957 7845 | 7017 | 7077 | 7137 |
| qq | Qy Dp | Qy Db | Qy Dp | Oy Db | Oy Dp | Qy Db | QY Dp | Qy Dp | Oy Dp | Qy | Qy | Oy Db | Oy Op | Oy Dp | 0y D | Qy | Qy | , yo |

8276 8156 8216 7916 7976 8036 8096 9044 9104 9164 7676 1196 8684 7856 8744 8804 8864 8924 8984 7556 8564 8624 7496 8444 8504 8204 8264 7436 8324 8384 GAAAATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTA TGGCTAACATGGTGAAACCCCCATCTCATAAAAATACAAAAATTAGCTGGGCGTGGTG 7977 GAAAATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTA TCCCAGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCC GTATTCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAAT 8805 GIAITCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCTTGTTCTGATAAT CCATTTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGA AGAGACATACACCTATGTCATTTCATTTTCGAAGAGGACTCCTTAAATTTGG GGGACTTACATGATTCATTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAG CTTCCATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGA AACGTGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGGAGAAAAACTAGAGACTCA AATTGCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAGATTTCC 8037 8745 8865 8985 8157 9045 9105 8625 7857 8925 8097 8217 8505 7677 8565 7737 7197 8685 7917 7377 8265 7437 8325 8382 7557 8445 7617 8145 8025 7197 8085 7317 8205 7497 7257 qq Dβ g Op οŽ a Qγ οg qq QQ οy Ω οp δ οy g Óχ δy q Οy Op δy Ω δy g οy qq Ω g QΥ Q Ωÿ οy ò

| 8277 | 7 GCAGACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAG | 8336 922 4 |
|--------------|---|----------------------|
| 337 | 7 GAGGCAGACCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGT | |
| 8397 9285 | 7 GAGACTCCATCTCAAAAAAAAAAAAAAAAAAAAAAAAAA | 8456 9344 |
| 8457 9345 | 7 AGTATAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTG | 7 0 |
| 8517 9405 | ACCGTTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | |
| 8577 9465 | AGAAGGAAGGAGTGGCTCTTCTCTTGTCTCATTGTGTTTCTTCTGAGTGAG | 8636 9524 |
| 8637 9525 | / ACATGAAGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAA | 8696 9584 |
| 8697 9585 | AGTCCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCTCTGTTGCTCTTTTGGCA | 8756 9644 |
| 8757 9645 | TTCATTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCT | 8816 9704 |
| 8817 9705 | GGGCTTCACACACGGTGTCCTCCCTAGGCCAGTGCTCTGGAGTCAGAACTCTGGTGGTA | 8876 9764 |
| 8877 9765 | TITCCECAATGAAGTGGAGTAAGCTCTCTCATTTGAGATGGTATAATGGAAGCCACCA | 8936 9824 |
| 8937 9825 | AGTGGCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAA | 8996 9884 |
| 8997 9885 | AAAAAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATG | 9056 9944 |
| 9057 9945 | TTCAAAAGAGTCTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCA | 9116 10004 |
| 9117 | TGATCTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCT | 9176 10064 |
| 9177 0065 | CCCAAGTAGCTGGGATTACAGGCGTGCACCACATGCCCGGCTAATTTTGTATTTTAG | 9236 10124 |
| 9237 0125 | TAGAGACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCTCTTCTTCTTCTTTTTTTT | 9296 10184 |
| 9297 0185 | CGCCTGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGT | 9356 10244 |
| | | |

10016 10196 10484 10664 10724 10076 11144 10256 10436 9236 9656 9656 9716 9116 9836 9686 9366 10964 11024 11264 10496 CAAAAGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCA ATATACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTCT **TCTTTTAAAACCATTTTCTTTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGTAAATGTG** ATTTACGCTCATTGTAGAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAG CCAGTGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAA GITCAICITGIGIAIAIACITAAICGCITIGICAITITGGAGACAITIAITITGCTICIA ATTICITIACATITIGICITACGGAATATITICATICAACIGIGGIAGCCGAATTAAATCG TGTTTCTTCACCTCAAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGC AAACCATTCTGAAAGCATATGACAAATTATTTCTCTCTTAATATCTTACTATACTGAAAG TATTAGGTAAGCATTTGTTTTATATTGGTTTTTATTTCACCTGGGCTGAGATTTCAAGAAA TTAATTTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGA GCAGCGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACT CACCCCAGICITCACAGIAACACAITICACIAACACAITIACIAAACAICAGCAACIGIG 9477 9597 10845 10965 9357 9417 10305 9537 10425 9657 9717 9777 9837 10725 6867 9957 10197 10245 10365 10485 10545 10605 10905 10077 10257 10665 10785 10017 10137 11025 11085 11145 10317 11205 10377 11265 10437 qq Ω g qq qq qq qq qq qq d g δy QΥ QY ٥y δ Qγ ōλ οy q οy δy QΥ q ò Ω a δ g δŏ q Qγ 9 δŽ q Óλ

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158660 158759; gap of 100 bp 158760 164235; contig of 5476 bp in length 164236 164335; gap of 100 bp 164336 184996; contig of 20661 bp in length 185097 193752; contig of 8656 bp in length Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1203 (1) 130000: Control of 100 bp 13661 135000: Control of 100 bp 136761 153913: Control of 17153 bp in length 153914 154013: gap of 100 bp 154014 158659: Gontrol of 4646 bp in length 158760 164235: control of 5476 bp in length 158760 164235: control of 5476 bp in length
                                          3251 3350: gap of 100 bp 3351 14600: contig of 11250 bp in length 14601 14700: gap of 100 bp 14701 32357: contig of 17557 bp in length 32358 32457: gap of 100 bp 32458 34886: contig of 2449 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11914: gap of 100 bp 120276: contig of 8362 bp in length 20376: gap of 100 bp 136660: contig of 16284 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                               64072: gap of 100 bp
82711: contig of 18639 bp in length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             p of 100 bp contig of 29003 bp in length
                                                                                                                     14701 32357; contig of 17657 bp in length 32358 32457; gap of 100 bp 32458 34886; contig of 2429 bp in length 34887 34986; gap of 100 bp 43590; gap of 100 bp 43591 43590; gap of 100 bp 43591 43591; contig of 3847 bp in length
                                                                                                                                                                                                                                                                                                 47438 47537: gap of 100 bp 47538 57356: contig of 9819 bp in length 57357 57456: gap of 100 bp 57357 57457 59845: contig of 2389 bp in length 59346 59945: gap of 100 bp 100 bp 63972: contig of 4027 bp in length 63973 64072: gap of 100 bp
                  contig of 3250 bp in length
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                        3250:
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120377 13666
  preserved.
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Homo saptens chromosome 6 clone RP11-557F22, *** SEQUENCING IN
AL359892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
1 (bases 1 to 193752)
                                                                                                           10557 CCAGCTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACA 10616
                                                                                                                                                                                                           10617 ACAGAAGGAAAACAAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGA 10676
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Submitted (12-70N-2001) Sanger Centre, Hinxton, Cambridgeshire,
Submitted (12-70N-2001) Sanger Centre, Hinxton, Cambridgeshire,
CB10 15A, UK. E-mail enquiries: humquery@sanger.ac.uk
requests: clonerequest@sanger.ac.uk
On Aug 27, 2000 this sequence version replaced gi:9864230.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Assembly program: XGAP4; version 4.5 Sequencing vector: plasmid: L08752; 100% of reads Sequencing vector: plasmid: L08752; 100% of reads Chemistry: Dye-terminator Big Dye: 100% of reads Consensus quality: 18925 bases at least 040 Consensus quality: 18958 bases at least 030 Consensus quality: 189568 bases at least 020 Insert size: 19252; sum-of-contigs Insert size: 19252; sum-of-contigs Quality coverage: 3.68x in 020 bases; sum-of-contigs Quality coverage: 3.70x in 020 bases; agarose-fp
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* This record will be updated with the finished sequence as soon as if is available and the accession number will
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AL359892/c DEFINITION

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| 40 GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA 61 GAAGCAGAAAGCAAGCCAAGTCACTCTGGGGCTGACATTGAGCAGAGACATGAAGGA 1111111111111111111111111111111 | 81 TEGATTAAAAAGCGGGTTTCTCAGCACTACTCATGTGTGTGT | OO NNNNNNNNNNNNNNNNNNNN | 41 | 76 TGTAGGATGTCTAGCAGTATCCTGTCCTACTACTCACTAGGTGCTAGGAGCACTCCCCC | 36 AGTCTTGACAACCAAAAATGTCTCTAAACTTTGCCACATGTCACTAGTAGACAAACTCC | 96 TGGTTAAGAAGCTCGGGTTGAAAAAATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGA | 56 AGTAGGTAATGGGCTCAGAAGAGGAGCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTG | 16 TGGTGTGAATTCTAGCCAAGGAGTAACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTC | 76 TGGCTGCTATGTGGAAACCAGAATGAAGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAG | 36 GAAGCTGTTACACAGTCCAGGCAAGAGGTAGTGGAGTGG | 96 GAGTGACAAACCATTGTCTCCTGAATATATTCTGAAGGAAG | 56 TGTGTGAGAGAAGAAGAAGTTGGCTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAA | 16 GGAGAGCAGATTCCTGAGCTCAGGAGTTCAAGACCAGCCTGGGCAACACAGCAAAACCC | 76 ITCTCTACAAAAAATACAAAAATTAGCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCT | 36 | 96 CATGACTGTGCCACTGTACTTCAGCCTAGGTGACAGAGCAAGACCTGTGTCCCCTGACC 1111111111111111111111111111111111 |
| b 149 y 18 b 148 y 19 y 148 | 14 1 | y 20 | y 20 b 146 | y 20° | y 21 b 145 | y 21 b 144 | y 22 b 144 | y 23 b 143 | Oy 23 Db 142 | Oy 24 Db 142 | y 24 b 141 | y 25 b 141 | y 26. | y 26 b 139 | Oy 27 Db 139 | •• - |
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13082 12842 13562 3690 2915 3035 3155 3275 3390 3450 3570 3630 3750 3810 3870 GAGTTTGAGACAAGCTTGGCCAACATGGTGAAACCCCCATGTCTACTAAAAATACAAAAAT 3215 ITCAACTACCATGGCTAGACACACCTTAACATTTTCTAGAATCCACCAGCTTTAGTGGAG 3510 3930 GGGGTAAATCAAGGATCTGCATTT-GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCC TCTGTCTAATCATGAGTATTGGAATAGGATCTGGGGGGCAGTGAGGGGGGTGGCAGCCACGT TGGTCTTTCCTTGTTTGAAGCTTTGGGCTACGTGGATGACCAGCTGTTCGTGTTCTATGA TNATGAGAGICGCCGIGIGGAGCCCCGAACICCAIGGGITICCAGIAGAAITICAAGCCA CCCTGAAAAAGAAGAAGAGTTAAAGTTGACTTTGTTCTTTATTTTAATTTTATTTGGCCTGA GCAGTGGGGTAATTGGCAATGCCATTTCTGAGATGGTGAAGGCAGAGGAAAGACAGTTT GGGGTAAATCAAGGATCTGCATTTGGGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCC AAGTGGTGAGGCCACATAGGCAGTTCAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGT GGCTCACTTCTGTAATCCCAGCACTTTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAG AACTGAAGGAATTATTCCTCAGGATTTGGGTCTAATTTGCCCTGAGCACCAACTCCTGAG GACTGCAACTCACCCTTCACAAAATGAGGACCAGACACACAGCTGATGGTATGAGTTGATGC AGGTGTGTGGGGCCTCAACATCCTGCTCCCCTCCTACTACACACATGGTTAAGGCCTGTTGC TCTGTCTCCAGGTTCACACTCTCTGCACTACCTCTTCATGGGTGCCTCAGAGCAGGACCT 2856 2916 13740 2976 3036 3096 3276 3391 3451 3511 3571 13081 3631 3811 13621 13381 3336 3751 13800 13680 13561 3156 13501 3216 13441 13321 13261 13201 13141 13021 12961 12901 12841 3871 12781 3691 QQ Pp Dp q P g g QQ QQ qq Q Op QQ Op Q g Dp Op δ δý δ ŏ δ δ οy Ω οy Οy Qγ Ω δ Q ò Ω δy QΥ

| 3990 12662 | 4050 12602 | 4110 12542 | 4170 | 42 30 12422 | 4290 12362 | 4350 | 4410 12242 | 4470 | 4530 12122 | 4590 12062 | 4650 | 4 710 11942 | 4770 | 4830 | 4890 11762 | 4950 11702 | 5010 11642 | 5070 |
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I (bases 1 to 246282)
Ruddy, D.A., Kronmal, G.S., Lee, V.K., Mintier, G.A., Quintana, L., Domingo, R. Jr., Meyer, N.C., Irrinki, A., McClelland, E.E., Fullan, A., Mapa, F.A., Moore, T., Thomas, W., Loeb, D.B., Harmon, C., Tsuchihashi, Z., Wolff, R.K., Schatzman, R.C. and Feder, J.N.
A 1.1.Mb transcript map of the hereditary hemochromatosis locus Genome Res. 7 (5), 441-456 (1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human hereditary haemochromatosis region, histone 2A-like protein gene, hereditary haemochromatosis (HLA-H) gene, RoRet gene, and sodium phosphate transporter (NPT3) gene, complete cds. U91328 U91328.1 GI:2088550
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Ruddy,D.A., Kronmal,G.S., Lee,V.K., Mintier,G.A., Quintana,L.,
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Direct Submission
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Campbell Avenue, Menlo Park, CA 94025, USA
Location/Qualifiers
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AUTHORS
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AUTHORS
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/protein_id="AAB82083.1"
/db_xref="G1:2088551"
/translation="MGPRARPALLLLMLLQTAVLQGRLLRSHSLHYLFWGASEQDLGL
SLFBALGYVDOQLFPEYDHESRRYDERPTPWYSSRISSQWWLQLSQSLKGWDHMFTVDF
WTIMENHNHSKESHTLQVILGCEMQEDNSTEGYWKYGYDGQDHLEFCPDTLDWRAAEP
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SVTTLRCRALNYYPQNITMKWLKDKQPMDAKEFEPKDVLPNGDGTYQGWITLAVPPGE
EQRYTCQVEHPGLDQPLIVIWEPSPSGTLVIGVISGIAVFVVILFIGILFIILRKRQG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(join(46833. .46873,47827. .47940,48099. .48374,
49470. .49745,49955. .50218,53543. .53618))
/gene="HLA-H"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement (48868. 49182)
/rpt_family="Alu"
/rpt_type=dispersed
complement(50599. 50888)
/rpt_family="Alu"
/rpt_family="
/rpt_type=dispersed
39132. 39252
/rpt_family="Alu"
/rpt_type=dispersed
complement(40045. 40645)
/rpt_family="Alu"
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complement(45532. .45851)
/rpt_family="Alu"
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complement(56521. .56801)
/rpt_family="Alu"
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complement(59299. .59737)
/rpt_family="LTR2"
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complement(65665. .66013)
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complement(46833. 53618)
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complement(56085..56461)
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40960. 41246
/rpt_family="Alu"
/rpt_type=dispersed
41581. 42174
/rpt_family="Alu"
/rpt_type=dispersed
42432. 42541
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57660. 57815
/rpt_family="Alu"
/rpt_type=dispersed
58118. 58483
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44636. .44911
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58672. .58900
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                                                                                                                                                                                                                                                                                                                                                           /rpt_family="MIR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'rpt_family="L1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCAGGATTTAAAAAACCAAGGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT
                                                                                                                                                                                                                                                                                                                                     421 CAGGGGCGCTTGCTGCGTGAGTCCGAGGGCTGCGGGCGAACTAGGGGCGCGGGGGGGTG
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                                                                                                                                                                                                                                                                                                                                                                                    CTGCTGTAGGAGAGAGAACTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                    TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITCCCCGCCCCCAAAAGAAGCGGAGATTTAACGGGGACGTGCGGCCAGAGCTGGGGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAAAAATCGAAACTAGCTTTTTCTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCAACCCTATCCGCAAGCCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG
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                                                                                                                                                    1;
                                                                                                                  DB 9; Length 246282;
                                                                                                                                                    Indels
                                                                                                                                                    2;
                                                                                               Score 7542; DP
                                                                                                                                                  0; Mismatches
/rpt_family="LTR2"
/rpt_type=dispersed
66764. 67053
/rpt_family="Alu"
/rpt_type=dispersed
67743. 68016
                                                                                                               Best Local Similarity 100.0%;
Matches 1082; Conservative
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| 53019 | 1020 52959 | 1080 52899 | 1140 52839 | 1200 52779 | 1260 52719 | 1320 52659 | 1380 52599 | 1440 52539 | 1500 52479 | 1560 52419 | 1620 52359 | 1680 52299 | 1740 | 1800 52179 | 1860 52119 | 1920 52059 | 1980 51999 | 2040 51939 |
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| GGTTTCCACCTCAGAACGAATGCGTTGGGCGGGGGGCGCGAAAGAGTGGCGTTGGGGA | TCTGAATTCTTCACCATTCCACCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT | GGGAGGCTCCTGAGAGGCCTACCTCGGCCCTTCCCCACTCTTGGCAATTGTTCTTTT | GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG | CTAGGCTITATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA | TAATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATCTGATCTTATTTGA | TITTCACTAGGCATAGGGAGGTAGGACTAATAATACGTTTATTTTACTAGAAGTTAACT | GGAATTCAGATTATATAACTCTTTTCAGGTTACAAAGAACATAAATAA | ATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG | TGTAGCACAGTGTTCTGTGGGTCACGCCGGCCTCAGCACCAGCACTTTGAGTTTTGGTA | CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG | CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC | TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAATTTCATGTTGAGCAG | AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC | CAAGGGAGAGAGCAGGAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA | . GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA | AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAACTGAGTGGGCCTGGCAGG | . TTGGATTAAAAGCGGGTTTTCTCAGCACTACTCATGTGTGTG |
| 53078 | 961 53018 | 1021 52958 | 1081 52898 | 1141 | 1201 52778 | 1261 52718 | 1321 52658 | 1381 52598 | 1441 52538 | 1501 52478 | 1561 52418 | 1621 52358 | 1681 52298 | 1741 | 1801 52178 | 1861 52118 | 1921 | 1981 51998 |
| QQ | Qy | Qy Dp | Qy Db | Oy Db | Oy Dp | Qy Dp | Qy Db | Qy Db | Qy Db | oy Dp | Qy Db | 6 6 6 | Qy Pb | Oy Dp | Oy Op | Qy Dp | Qy Db | oỳ Ob |

51399 51339 51279 2760 2880 2940 2400 2520 2580 2640 2700 2820 2220 2280 2340 2460 GITCAAGACCAGCCTGGGCAACACGAAAACCCCTTCTCTACAAAAAATACAAAAATA TTCTGAGATGGTGAAGGCAGAGAGAAGAGCAGTTTGGGGGTAAATCAAGGATCTGCATTTG CAGTGFAAGAATTCAGGACCAAGGCTGGCCACGGTGGCTCACTTCTGFAATCCCAGCACT ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG TATATICTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAAGAGAATTGG GTTCAAGACCAGCCTGGGCAACACACAGCAAAAACCCCTTCTACAAAAAATACAAAAATTA TGACTTTGTTCTTTATTTAATTTTAGCCCTGAGCAGTGGGGGTAATTGGCAATGCCAT GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG AGGTAGTGGAGTGGGCTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCCAAGGAGAGCAGATTCCTGAGCTCAGGA GCTGGGTGTGGTGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA AAACTITGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG CGGCGTGGGGGAAAGGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT AATAAACAAGTAGTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA 3061 50919 51938 2101 2161 2221 2281 2341 2401 2461 2521 2581 2641 2701 51278 2821 51158 2881 2941 51038 3001 50979 2041 51098 51878 51818 51758 51698 51638 51578 51518 51458 51398 51338 q QQ Ωp δλ qq g qq QΥ QQ δ g Qγ g δλ Ωp οy g Ωÿ qq οy d ò g Q οp g QQ Qγ ΟŻ οy οy δy ΟŊ ÓΥ ÓΥ οy

| ογ Oγ | 3121 50859 | TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAACCTTGGCCAACA 3180 | |
|----------|---------------|---|--|
| Q Dp | 3181 | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGGGGGGGG | |
| Qy Dp | 3241 | ATAGTOCCAGGTTTTCAGGAGGCTTAGGTAGGAATCCCTTGAACCCAGGGGGGGG | |
| oy ob | 3301 50679 | TIGCAGIGACCIGAGAITGIGCCACTGCACTCCAGCCIGGGTGAIAGAGTGAGACTCTGI 3360 | |
| Oy Dp | 3361 | CTCAAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG 3420 | |
| Qy Dp | 3421 50559 | TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACCTTAAC 3480 | |
| Qy Db | 3481 | ATTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 3540 | |
| Qy Dp | 3541 50439 | CTGGGGGCAGTGAGGGGGGGGGCAGCAGTGTGGCAGAAAAAGCACACAAGGAAAGGC 3600 | |
| oy Oy | 3601 50379 | ACCCAGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCCTTCACAAATGAGGA 3660 | |
| Qy Dp | 3661 50319 | CCAGACACACTGATGGTATGAGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCCC 3720 | |
| Qy Dp | 3721 50259 | . TECTRACTACACATGGTTAAGGCCTGTTGCTCTCGAGGTTCACACTCTCTGGACTA 3780 | |
| Qy Db | 3781 50199 | CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTAGAGCTTTGGGCTA 3840 | |
| Qy | 3841 | CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC 3900 | |
| Oy Db | 3901 | TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCTGAA 3960 | |
| Oy Db | 3961 50019 | AGGGIGGGAICACATGTICACTGTIGACTICTGGACTATTATGGAAAATCACAACACAA | |
| Qy | 4021 | CAAGGITATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 4080 | |
| OY Dp | 4081 | ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGGGA | |
| QY | 4141 | GAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT 4200 | |
| ΟŸ | 4201 | TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG 4260 | |

48940 49300 49000 48880 4440 4740 5040 5340 CTCCTAGGTTGACCCAGGTGAACTGACCATCTGTATTCAATCATTTTCAATGCACATAA TGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGGCAGACAGGGCCTAC TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA GTGTCTATGGCCCTTGCTTTTTATTTAACCAATAATCTTTTGTATATTATACCTGTTAA AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG AGGCCGAGGCGGGTGACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA GGCTGTGAAATGCAAGAAGACAACAGTACCGAGGGCTACTGGAAGTACGGGTATGATGG CTGGAGAGGGACTGCCCTGCACCTGCAGCTGCTGGAGCTGGGGAGAGGTGTTTTG GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG **ACCCGTCTCTAAAAAAATACAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA** CAGGACCACCTTGAATTCTGCCCTGACACACTGGATTGGAGAGCAGCAGAACCCAGGGCC AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC 4441 49539 49479 4561 4261 49719 4381 4501 4621 4741 4801 4861 4921 49059 5161 5281 49779 4321 4981 5101 5221 48759 49659 49599 49419 49359 49239 49119 48999 5041 48939 48879 48819 g g QQ qq g g g ΩD δy ΩŽ δy qq Qγ Ω qq ΩY δ Qγ δy ŏ pp δ q Qγ g ò q pp g qq a δŽ δ δ δ δ

| AGGGC AGGGCC AGGGCC AGGGCC AGGGCC AGGGCC AGGGCC AGGGCC AGGGCC AGGCCC AGGCCC AGGCCC AGGCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC |
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| $\begin{smallmatrix} 6 & 1 & 6 $ |

| CAAGTAAATGTAGTTAAAGAAG 648 | TAGGGTGTCAAAGGAAAGAATG 65 | CTTGAAGGAGAAGCTGGATTCCA 6600 | 3GAGCAACCATGCCAAGTAGGA 66 | GTACCTTAACCCTGAGTTTGCGT 6720 | STGGTGTAGGGAAAAGA 67 } | rtttgggatattgggttatga 68 | ACCACGATCTCCCTTATATGGTG 6900 | CCAGTTAGAAAGCCAATAAGCAT 6960 | TGCCCAGGTCTAAATTGAGATGG 7020 | GGTGCCTAGGTTTGTGATGCCT 70 | GGGCACTACGTCTTAGCTGAACG 7140 | ragagactcaaaga 72 | STTGAACCTAAACATAGAAATT 726 | TTCCTCAAAAAGA | CTGTGACCTCTCCCCTGGAACTG 7380 | TCATTTCTCGTCACCTCAGAG 7440 | |
|--|--|--|--|---|----------------------------|---------------------------------------|---|----------------------------------|--|-------------------------------|--|--------------------------------|--|-------------------------------|------------------------------|---|--|
| TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAG | ACCCATGAGGTCCTAAAGCAGGCAGGAAGCAATGCT | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGAT(| TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGAC | GTATAAGGCATACTGGGAGATTAGAAATAATTACT | CACCAATTATGCATTTCTACCCCTG | TCAGAAAGAAGCCAGCTCATACAGAGTCCAAGG | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGG | STTAGATGAGAGGTGAGGAGA | TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAG' | AGAAGAGGCAAGA | CTTTCCTGGGTCTCTGTCTCCACAGGAGGAGCCATG | CAGCCTGCAGACTCACTGTGGGAAGG | TTATGAGCTCTTC TTATGAGCTCTTC | CTCCTTGATTTAGCCTTCTCTGTTC | STGATCCCTAG | TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTT(| |
| 6421 47559 | 6481 47499 | 6541 | 6601 47379 | 6661 47319 | 6721 47259 | 6781 47199 | 6841 47139 | 6901 47079 | 6961 47019 | 7021 | 7081 | 7141 | 7201 | 7261 | 7321 | 7381 | |
| Qy | Qy | Qy Db | Qy Dp | Qy Dp | Oy Dp | Qy | Qy | Oy Db | Qy | Qy | Qy | Qy | Qy | Qy Db | Qy | QY Dp | |

| 20 | 091 | 300 | 40 240 | 00 180 | 60 120 | 20 060 | 000 | 40 940 | 00 | 60 820 | 20 760 | 80 700 | 40 640 | 00 580 | 60 520 · | 20 460 | 80 | 40 |
|--|---|---|--|--|---|---|---|--|--|---|---|--|---|---|--|---|---|--|
| CITACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT 756 | AACCTIACCAGATTITIACACAIGIAICTAIGCAITITITCIGGACCCGITCAACTITITCCT 762 | TIGAAICCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAACCCTTGGGGATTCTTC 76 | CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG 77. | GCACCTGTCCCAGAAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGGGGTGTTTTTAGC 781 | AGGTAGGAGGCAAATATCTTGAAAGGGGTTGTGAAGAGGTGTTTTTTCTAATTGGCATGA 78 | AGGIGICATACAGAITIGCAAAGITIAAIGGIGCCTICAITIGGGAIGCIACICIAGIAI 79 | TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA 79 | ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA 80. | CATGCATTACTGCATGCACTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT 81 | TTCTTTTTAAATGAAGAAAGTGAAGTAGGCCGGCACGGTGGCTCACGCCTGTAATCCC 81 | AGCACTITGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 82 | TAACATGGTGAAACCCCATCTCTAATAAAAATACAAAAATTAGCTGGGGGTGGTGGCGG 82 | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG 83 | 1 CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 84 | CTCCATCTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | 1 TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG 85 | 1 ITTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | 1 GGAAGGAGATGGCTCTTCTTGTCTTCATTGTGTTTCTTCT |
| 7501 | 7561 46419 | 7621 46359 | 7681 | 74 | 7801 | 7861 46119 | 7921 46059 | 7981 45999 | 8041 45939 | 8101 45879 | 8161 45819 | 8221 45759 | 8281 45699 | 8341 45639 | 8401 45579 | 8461 45519 | 8521 45459 | 828 |
| , QQ Db | Oy Dp | Qy Db | QY | QY Db | oy Ob | oy Ob | \$ g | Qy Db | Qy Db | Qy Dp | ço q | Qy Db | QY Db | QY Db | Oy Db | Qy Db | ζ 2 | οy |

44560 44440 44980 44500 44380 44800 44620 9480 9540 9720 9180 9360 0096 45160 8880 TGAAAAACTATTAACAACTIGTCTATTACCTGTTAGTATTATTGTIGCATTAAAAATGCA **ACCCTCATTCTAGAAAACCTATAAAATGAATACAATTAAAAGCTGTTATTTAATTAGCCAG** TIPAAACCATTTTCTTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGTAAAAGTTTT TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTTTTTTT CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCCAGGCTGGAGTGCAATGGCATGAT AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTTGTATTTTTAGTAGA GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTTGGCATTCA GAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC TITCITTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGG 9241 44739 9301 9361 9421 9481 9541 9601 9661 45099 8941 44919 9121 9181 44559 44499 44439 8701 8761 45219 8821 8881 45039 9001 9061 44859 44799 44679 44619 8641 45279 45159 45399 45339 q g Op qq ò Db οy ò QΥ Qγ g q . ga δý qq δ q δý g Qγ 염 Óγ d δ g δ Dp g Ω ŏ δ Dp δy ŏ Ω

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                                                                                   CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT
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                                                  10081 AGGTAAGCATTTGTTTTATATTGGTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC
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All Submitssion

All Submitted (05-SEP-2001) Sanger Centre, Hinxton, Cambridgeshire, CB10 1874, UK. E-mail enquiries: hunquery@sanger.ac.uk Clone requests: Clonerequest@sanger.ac.uk clone assembly data is compared from overlapping clones. Where differences are found these are annotated as variations. On Jun 26, 2000 this sequence version replaced from overlapping clones. Where differences are found these are annotated as variations to responding to the overlapping clone name. Note that the variation annotation may not be found in the sequence submission corresponding to the overlapping clone, as we submit sequences with following abbreviations are used to associate primary accession numbers given in the feature table with their source databases:

Em: EMBL; Sw:, SWISSPROT; Tr:, TREMBL; Wp:, WORMPEP; Information on the WORMPEP database can be found at http://www.sanger.ac.uk/Projects/C_elegans/wormpep This sequence they may generated from part of bacterial clone contigs of human chromosome 6, constructed by the Sanger Centre Chromosome 6 Mapping Group. Further information can be found at thitp://www.sanger.ac.uk/HGP/Chr6

This sequence was finished as follows unless otherwise noted: all regions were either double-stranded or sequenced with an alternate chemistry or covered by high quality data (i.e., phred quality >= 30); an attempt was made to resolve all sequencing problems, such ascompressions and repeats; all regions were covered by at least one plasmid subolone or more than one M13 subclone; and the second one plasmid subolone or more than one M13 subclone; and the second of the sec
                                                                                                                                                                                                                                                                                                                                                               AL353759 101099 bp DNA linear PRI 05-SEP-2001 Human DNA sequence from clone RPI-221C16 on chromosome 6. Contains the 3' part of the HFE gene for haemochromatosis protein, two genes for novel histone 4 family members, two genes for novel histone 1 family members, three genes for novel histone 1 agene for a novel histone 2 agene for a novel histone 2 agene for a novel histone 2 agenes for novel 2 agenes 2 a
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HTG; CpG island; H1; H2A; H2B; H4; haemochromatosis; HFE; histone.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Eutele
Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
1 (bases 1 to 101099)
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/gene="HFE"
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VECTOR: pCYPAC2
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                                                               43179 TAAAATCCCCAAATTTTTCATAAAC 43155
10801 TAAAATCCCCAAATTTTTCATAAAC 10825
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/codon_start=1
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/note="Single clone region. Sequence confirmed by U91328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and assembly confirmed by restriction digest."
4717. 4799
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4816. 4979
match: ESTs: Em:N93736 Em:R07696 Em:R47761 Em:A1763178
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1127. .1305
/note="MER91B repeat: matches 12. .174 of consensus'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                consensus
                                                                                                                                      /note="lsoform 2, splice variant delE2(14E4)
match: CDNAs: Em:AF079407 Em:AF079409 Em:AF079408"
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/evidence=not_experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3154. .8275 '
/note="FLAM_C repeat: matches 9. .127 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1427. .1554
/note="MIR repeat: matches 121. .241 of consensus"
/note="MIR repeat: matches 1. .308 of consensus"
/note="Aux repeat: matches 1. .308 of consensus"
1863. .1944
/note="MIR repeat: matches 38. .121 of consensus"
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2495, .2780
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3135, .3140
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5232. .5532
/note="Alusx repeat: matches 1. .298 of consensus" 5547. .5825
/note="Aluso repeat: matches 1. .295 of consensus" 6160. .6457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .311 of consensus"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .299 of consensus'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4816. .4979 ... - reconstructions or 189. .6275 of consensus "Anote="MIR repeat: matches 90. .257 of consensus" 5232. .5532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         / 195. 7322 -- reat: matches 1. .311 of cc // note="AluJb repeat: matches 131. .260 of 8012. .8059 // note="2 copies 2" -- reat: matches 131. .260 of 8012. .8059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         copies 2 mer ac 97% conserved"
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/note="12 copies 24 mer 100% conserved"
8529. .905.
/note="match: GSS: Em:AQ768314"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="Alusg repeat: matches 1.
complement(6443. .6725)
/note="match: GSS: Em:AQ092256"
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                                                                                                                                                                                                                                                                                                               match: proteins: Sw:Q30201"
                                                                                                                                                                                                                                                                                                                                                                                                                                                         'translation="GAMGHYVLAERE"
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                                                                                                                                                                                                                                                                                                'note="isoform 1
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3155. "155.
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3176
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/note="23 co
                                                                                                                                                                                                                                 /gene="HFE"
<533. .573
                                                                                                                                                                                                                                                        <533. .573
/gene="HFE"
                                                                                                 <533. .577
/gene="HFE"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MLFAGYYILRFSVVMSETVPAASASAGLAAMEKLPTKKRGRKPA
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AKTINKRAKKPRATTPKTVRSGRKAKGAKGKOKOKSPVKARASKSKLTQHHEVNVRKAT
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13591. 13667
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6575 GATCTTGAAGGAGAAGCTGGATTCCATTAGGTGAGGTTGAAGATGATGGGGGGGTCTACAC 6634
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Sw:P35057 Sw:P35059 Sw:P27996"
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13241. .13590
//note="MERIB repeat: matches 1. .337 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="AluSg1 repeat: matches 3. .300 of consensus"
13069. .13240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          15369. .15581
/note="AluJo repeat: matches 1. .261 of consensus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .305 of consensus"
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  Em: AQ751497
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GSS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="dJ221C16.1"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="dJ221C16.1"
10871. .11142
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| 61 | | 6755 181 | 6815 | 301 | 6935 361 | 6995 | 7055 | 7115 | 7175 | 7235 | 7295 | 7355 | 7415 | 7475 901 | 7535 961 | 7595 1021 | 7655 1081 | 715 |
| a a | g 5 | Qy Dp | Oy Dp | g & | Oy Op | Qy Dp | Oy Dp | Oy Dp | Oy Dp | Qy Db | Qy Dp | Qy Db | Oy Dp | Qy Dp | Qy | Oy Dp | Qy Dp | Oy. |

| Oy i | r 0 | TGGGTAGTATGATGGGTGTTTTTAGCAGGTAGGAGCCAAATATCTTGAAAGGGTTGTGA | 83 |
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| an i | 20. | GGGTAGTATGATGGGTGTTTTTAGCAGGTAGGAGGCAAATATCTTGAAAGGGGGTTGTG | 56 |
| Oy P | 7835 | AGAGGTGTTTTTCTAATTGGCATGAAGGTGTCATACAGATTTGCAAAGTTTAATGGTGC | 7894 |
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| 7 A | 32 | CITCATTTGGGATGCTACTCTAGTATTCCAGACCTGAAGAATCACAATAAATTTTCTACCT | |
| Qy | 7955 | STOTCTCTTTTTTGATAATTATGATAAGGATGATAAAAGCACTTACTT | |
| qq | 1381 | GGTCTCTCCTTGTTCTGATAATGAAATTATGATAAGGATGATAAAAGCACTTACTT | 1440 |
| Qy | 8015 | TACTGCATGCAC | 8074 |
| qq | 1441 | ICCGACTCTTCTGAGCACCTACTTACATGCATTACTGCATGCA | 1500 |
| Qy | 8075 | TACTATTATCCCCATTTCTTTTTAAATGAAGAAGTGAAGTGAAGTC | 8134 |
| QQ | 1501 | ATGAGATAGGTACTATTATCCCCCATTTCTTTTAAATGAAGAAAGTGAAGTGGCCG | 1560 |
| Qy | 8135 | GCACGGTGGCTCACGCCTGTAATCCCAGCACTTTGGGAGGCCAAAGCGGGTGGATCACGA | 8194 |
| QQ | 1561 | CACGGTGGTCACGCCTGTATCCCAGCACTTTGGGAGGCCAAAGCGGGTGGTCACAC | 1620 |
| Qy | 8195 | GTCAGGAGATCGAGACCATCCTGGCTAACATGGTGAAACCCCATCTCTAATAAAAATA | 8254 |
| QQ | 1621 | GGTCAGGAGATCGAGACCATCCTGGCTAACATGGTGAAACCCCATCTCTAATAAAAATAC | 1680 |
| Qy | 8255 | PAGCTGGGCGTGGCAGACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAG | 8314 |
| qa | 1681 | AAAAAATTAGCTGGGCGTGGTGGCAGACGCCTGTAGTCCCGGCTACTCGGAAGGCTGGG | 1740 |
| Qy | 8315 | CAGGAGAATGGCATGAACCCAGGAGGCAGAGCTTGCAGTGCAGTGGAGCCGAGTTTGCGCCACTGC | |
| qq | 1741 | AGGAGAATGGCATGAACCCAGGAGGCAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTG | |
| Qy | 8375 | ACTCCAGCCTAGGTGACACAGAGACTCCAACACAAAAAAATAAAAAAAA | 84 |
| QQ | 1801 | CTCCAGCCTAGGTGACAGAGTGAGACTCCCATCTCAAAAAAAA | 186 |
| Qy | 8435 | SAAAAAAAAAGAAAGTGAAGTATAGAGTATCTCATAGTTTGTCAGTGATAGAAAC | 8494 |
| qq | 1861 | | 1920 |
| ΟY | 8495 | GTTTCAAACTCAGTCAATCTGACGTTTGATACATCTCAGACACCACTACATTCAGTA | |
| qq | 1921 | GGTTTCAAACTCAGTCAATCTGACCGTTTGATACATCTCAGACACCACTACATTCAGTAG | 1980 |
| Qy | 8555 | TTTAGATGCCTAGAATAAATAGAGAAGGAAGGAGATGGCTCTTCTCTTGTCTTGTGTGT | 8614 |
| QQ | 81 | TTAGATGCCTAGAATAAATAGAGAAGGAAGGAGATGCTCTTTTTTTT | |
| δλ | 8615 | TCTTCTGAGTGAGCTTGAATCACATGAAGGGGAACAGCAGAAAACAACCAAC | 8674 |
| QQ | 2041 | TTCTTCTGAGTGAGCTTGAATCACATGAAGGGGAACAGCAGAAACAACCAAC | 2100 |
| QY | 8675 | AGGAAGGTCCTGGAATGTG | 8734 |
| qq | 2101 | AGCTGTCATGTTTCCTTTAAAAGTCCCTGAAGGAAGGTCCTGGAATGTGACTCCCTTG | |
| Qy | 8735 | TCCTCTGTTGCTCTCTTTGGCATTCATTTCTTTGGACCCTACGCAAGGACTGTAATTGGT | 8794 |
| qq | 2161 | CCTCTGTTGCTCTCTTTGGCATTCATTTCTTTGGACCCCTACGCAAGGACTGTAATTGG | |
| Οy | 8795 | GGGGACACCTGCTGCTGCTCGCTTCACACGGTGTCCTCCCTAGGCCAGTGCCTC | 8854 |
| QQ | 2221 | GGGACAGCTAGTGGCCCTGCTGGGCTTCACACGGTGTCCTCCCTAGGCCAGTGCCT | 2280 |

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| | | Description | Human hereditary h | Human hereditary h | Human hereditary h | Human hereditary h | Hereditary haemoch | Genomic DNA of a h | Hereditary haemoch | Human musculoskele | Hereditary haemoch |
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                                                               products. These proteins may be used to treat a patient diagnosed as having human hemochromatosis disease. It is also useful as a metal obelation agent or as a T-cell differentiation factor, and for alleviating iron overload. They may also be used in protein replacement therapy for individuals having a defective human hemochromatosis gene.
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    New hereditary hemochromatosis gene products or polypeptides, for treating hereditary hemochromatosis in a patient, and as a chelation agent alleviating iron overload -
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| 1861 | 1921 | 1981 | 2041 | 2101 | 2161 | 2221 | 2281 | 2341 | 2401 | 2461 | 2521 | 2581 2581 | 2641 | 2701 | 2761 2761 | 2821 | 2881 | 2941 |
| QQ | QY Dp | oy O | Qy Dp | Qy Dp | Qy Dp | Qy Dp | Oy Dp | Qy Dp | O _Y | Qy Dp | Q _Y | Qy Db | QY | QY | Qy Db | Qy Db | Qy Db | ΟY |

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6120 6180 6240 6240 5820 5880 5940 5940 0009 0009 0909 0909 6120 6180 6300 5460 5520 5580 5580 5640 5640 5700 5700 5760 5760 5820 5880 5400 5460 5400 AAGCATTTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAGAAAAT CAGAGATATACCTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGATCTGG TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGGG TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG GTGGCAATCAAAGGCTTTAACTTGCTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAAGACGTATTG GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGGTTGAGAGGAGTGCC **AGGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATATTTACATGTG** AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC 6061 6061 6181 6241 5881 6121 6121 6181 5461 5581 5641 5641 5701 5761 5761 5821 5821 5881 5941 6001 6001 5401 5521 5581 5701 5341 5341 5521 5161 5221 5221 5281 5281 5401 5461 5161 dd g g δ Oy Oy Db q g οŽ q QΥ g δ Ω QY 임 qq QΥ δŽ qq οy OD Qγ q QY qq QΥ qq δ Db ολ Op οy δý

| | CCTACTAT 6360 cctactat 6360 | GTGGCTAT 6420 gtggctat 6420 | TTAAAGAAG 6480 ttaaagaag 6480 | GAAAGAATG 6540 gaaagaatg 6540 | GGATTCCA 6600 ggattcca 6600 | CAAGTAGGA 6660 caagtagga 6660 | GTTTGCGT 6720 gtttgcgt 6720 | GGAAAAGA 6780 ggaaaaga 6780 | GGTTATGA 6840 ggttatga 6840 | TATATGGTG 6900 tatatggtg 6900 | AATAAGCAT 6960 aataagcat 6960 | rgagargg 7020 tgagatgg 7020 | TGATGCCT 7080 tgatgcct 7080 | AGCTGAACG 7140 agctgaacg 7140 | acrcaaaga 7200 actcaaaga 7200 | ATAGAATT 7260 atagaaatt 7260 | TTTCCCCAT 7320 ttccccat 7320 | rccccrggaacrg 7380 |
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| | AATGGTICTCCCCAGAATGAAAGTCTCTAATTCAACAAACATCTTCAGAGCA | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACT | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAG | ACCCATGAGGTCCTAAAGCAGGAGGAAAGCAAATGCTTAGGGTGTCAAAG | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGA | TTAGGTGAGGTTGAAGATGGAGGTCTACACAGAGGGAGCAACCATGC | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGA | AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAG | GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTG | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCT | AATGTGTTGTTAAGAAGTTAGATGAGAGGTGAGGAGACCAGTTAGAAAGCC | TTCCAGATGAGAGATAATGGTTCTTGA/ | GTGAATGAGGAAAATAAGGAAGAGAGAGAGCCAAGATGGTGCCTAGGTTTG | CTTTCCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGGGGCACTACGTCTT | TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAG | GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAAC | GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAA | TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCT |
| 6241 | 6301 | 6361 | 6421 | 6481 | 6541 | 6601 | 6661 | 6721 | 6781 6781 | 6841 6841 | 6901 6901 | 6961 6961 | 7021 | 7081 | 7141 | 7201 | 7261 | 7321 |
| qa | Oy Db | Qy Db | Qy Dp | Oy Dp | Qy Db | Qy | Qy Dp | QY Db | Qy Dp | Qy Db | QY Db | Qy | Qy Dp | Qy | Qy | Qy Db | Qy Db | Οy |

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| ICTCAGTGATAGAACAGGTTTCAAACTCAGTCAATCTGACCG 852 | orcitgrotcattgrottrottoryay.yayottyaa.cada AACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAGT | GACTC | GCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 8820 | rcctaggccagrgccrcrggagrcagaacrcrggrggrgraffrc 8880 | TAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG 8940 | GGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAA 9000 | ATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA 9060 | TTTTTGCAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT 9120 | CTCTGCCTCCCAGGTTCAAGGATTCTCCTGTCTCAGCCTCCCA 918 | GGCGTGCACCACCATGCCCGGCTAATTTTTGTATTTTTAGTAGA 9240 | GTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC 9300 | STGCTGAGA tgctgaga | VATCCAGATGGCATGTGTTACTTATGTTACTACATGCACTTG 9420 | ACAAGCATTCTGTCTT | rcrraggcarra |
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| CTCATAGTTTG ctcatagtttg ctcatagtttg ATCTCAGACAC atctcagacac | gaaggagatgge AAGGGGAACAGC | CTGAAGGAAGG7 | TTTCTTTGGACCCTACGCA | TTCACACAGGTGTCCTCC | rGGAGT tggagt | ragaggargo tagaggatgo | AAAATCTAACCAGGACATT aaaatctaaccaggacatt | AAAGAGTCTTTTTTTTTTT | CTCGCCTCACTGTAACCTC | 0 – 5 | GGTTCACCATG | GCCTCGGCCTCCCAAA | AGTCTTAATATATATAT | TGCATAAATGTGGTAC tgcataaatgtggtac | CAGCTCAGAAGTTTCTT |
| 461 461 461 521 521 581 | 8581 8641 8641 | 8701 | 8761 8761 | 8821 | 8881 | 8941 | 9001 | 9061 | 9121 | 9181 | 9241 | 9301 | 9361 | 9421 | 9481 |
| 0y 0y 0y | g o | Oy Dp | Qy Db | oy Db | oy D | Oy Dp | Oy Dp | Qy | QY | Q Q | O. O. | oy Ob | Qy | Oy Db | Oy Op |

10440 10500 10620 10621 AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680 10380 10440 10140 10200 10320 10020 10200 10260 10080 9720 9780 9780 0066 0966 CTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACAAGAG TTTTTCTGGCTTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG tttttctggctttattcataaattcttaaggtcaactacatttgaaaaatcaaagacctg CATITIAAATICITATICACCICIGGCAAAACCATICACAAACCAIGGTAGTAAAGAGAA GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT TTAAACCATTTTTTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAAGTAAATGTGATTT TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA 10501 10261 10201 10381 10441 10441 10501 10561 10561 9841 9901 1966 10021 10021 10081 10201 10261 10321 10321 10381 9541 1996 9721 9781 9781 9841 9901 9961 10081 10141 10141 9601 9601 1996 9721 9541 g ŏ qq Q Db a ŏ g δŽ δ QQ Q οχ g δ q QY Db QΥ οqα Ω qq δy δ δ g ŏ Op QΥ Op QΫ́ Qy g δ g δŽ

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                                                                          s used in protein replacement human hemochromatosis gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RK;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New hereditary hemochromatosis gene products or polypeptides, useful for treating hereditary hemochromatosis in a patient, and as a metal chelation agent alleviating iron overload -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The present invention relates to hereditary hemochromatosis gene products. These proteins may be used to treat a patient diagnosed a having human hemochromatosis disease. It is also useful as a metal chelatatin agent or a T-cell differentiation factor, and for alleviating iron overload. They may also be used in protein replace therapy for individuals having a defective human hemochromatosis ge
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TGAGAGGTACAGGCCAAAATTCTTATGTTGTATTATAATAATGTCATCTTATAATACTGT
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| | TAATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATCTGATCTTATTTGA | TTTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTA | GGAATTCAGATTATATAACTCTTTTCAGGTTACAAAGAACATAAATAA | ATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG | TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCTCAGCACACACA | TGTATCCACAT | CAAATITATICAAIGGTACACIGGGCTITGGIGGCAGAGCICAIGICTCCACITCATAGC | TTOTTAACATCACACTGCATTAGAGGTTGA | ARTATTCATTGTTTACAAGTGTAAATGAGTCCAGCCATGTGTTTGCACTGTTCAAGCC | 3GAGAGAGGAAACAGTCTTACCCTTGATATT | SACAATAAGCAAATGAGCAGAAAGATATACAAC | AAGCAGAGAAGTCAGGGCA | ATAAGAATGATATTGA | TTGGATTAAAAAGCGGGTTTT | CGGCGTGGGGTGGGAAGGGGACTACCATCTGCAT | CCTCCCTACTCACTAGGTGCTAGGAK | AAACTTTGCCACATGTCACCTAGTA | AATAAACAAGTAGTGCTGGGGAG |
| 1141 | 1201 | 1261 | 1321 | 1381 | 1441 | 1501 | 1561 | 1621 | 89 89 | 74 | 0 0 | 1861 | 1921 | 1981 | 2041 | 2101 | 2161 | 2221 |
| q | Qy Db | Qy Db | Oy Dp | Qy Db | Oy Db | Oy Dp | Oy Op | ý é | 7 Y d | 03 | Qy | Qy Db | oy D | oy g | oy Op | Oy Op | Oy Ob | ΟΥ . |

3360 3240 3240 3300 3300 3360 2940 3060 3120 3120 3180 3180 2760 3000 3000 3060 2640 2700 2700 2760 2400 2400 2460 2460 2520 2580 TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA CTGGGTGTAGTAGCTCATGCCAAGGAGGACCAAGGAGAGCAGATTCCTGAGCTCAGGA GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAATTA GCTGGGTGTGGTGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC CTAGGTGACAGAGCAAGACCCTGTCCCCTGACCCCCTGAAAAAGAGAAGAGTTAAAGT AGGTAGTGGAGTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCTGAA AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG aataaacaagtagtgctggggagtagaggccaagaagtaggtaatgggctcagaagagga 3121 3121 3181 3181 3241 3241 3301 3301 2761 2821 2881 2881 3001 3001 2761 2581 2641 2701 2821 2341 2461 2521 2521 2581 2641 2701 2281 2281 2341 2401 2401 2461 2221 QQ ŏ 엄 Ωy Ωp P οž Db Qγ qq Qγ Q g δ qq Db δy g QΥ ΩD δ οp QΥ Db QΥ g QY Óζ οy q gg QΥ oγ ò δ

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| CTCAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG | TCPAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACGATGGCTAGACACACTTAAC | ATTTCTAGAATCCACCAGCTTFAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT | CTGGGGGCAGTGAGGGGGTGGCACGTGTGGCAGAGAAAAGCACACAAGAAAGA | ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACCTCACCCTTCACAAAATGAGGA | CCAGACACAGCTGATGGTATGAGTTGATGCAGGTGTGGGGGCCTCAACATCCTGCTCCC | CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGCACTA | CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA | CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCGAAC | 3AG gag | GAAAATCA gaaaatca | CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC | AIGCAICTIGAAGGAAACAGCIGGAAGTCIGAGGICTIGIGGGAGCAGGGAAGAGGGAAGGGA | GAATTIGCTTCCTGAGATCATTIGGTCCTTGGGGATGGTGGAAATAGGGACTATTCCTT | ATTTTCCAGAGTCCCACACCCTG | TACTGGAAGTACGGGTATGATGG | CAGGACCACCTTGAATTCTGCCCTGACACTGGATTGGAGAGCAGCAGAAACCCAGGGCC | GGCCAGGCAGAACAGGGCC |
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| Qy | Qy | Qy | Qy | Qy | Qy | Qy | Oy Db | Qy Db | Qy | Qy Dp | Qy | Qy | Qy | Oy Dp | Qy Db | Qy Dp | Qy Db |

| | ATCATGTGACC 5640 atcatgtgacc 5640 | CATCACCATG 5700 catcaccatg 5700 | AAAGACCTATTG 5760 aaagacgtattg 5760 | CTGGGGAAGAG 5820 ctggggaagag 5820 | TTGTGATCTGG 5880 ttgtgatctgg 5880 | GAGAGGAGTGCC 5940 gagaggagtgcc 5940 | GTGGGCTGAGG 6000 | GTCTGGCACCC 6060 | CATTGGAATTT 6120 cattggaattt 6120 | GGGAACTCTCT 6180 gggaagtctct 6180 | GCATCCATGGG 6240 | AGACAGAAAAT 6300 agacagaaaat 6300 | GCACCTACTAT 6360 gcacctactat 6360 | ACTGTGGCTAT 6420 actgtggctat 6420 | AGTTAAAGAAG 6480 agttaaagaag 6480 | AGGAAAGAATG 6540 | GCTGGATTCCA 6600 gctggattcca 6600 | GCCAAGTAGGA 6660 |
|------|--|---|--|---|--|---|---|---|---|---|----------------------|--|--|--|--|---|---|------------------------|
| | CIT | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAA(| AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTA | CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCC | CAGAGATATACGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCTCA' | ICAGAGCCAGGAGCTGAGAAAATCTATTGGGGGTT | TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGG | GTGGCAATCAAAGGCTTTAACTTGCTTTTTCTGTTTTAGAGCCCTCACO | CATCAGTGGAATTGCTG | TGTTCATAATATTAAGGAAGAGCAGGGTTCAAGTGAGTGA | 3A.P gaa | AAGCATTITICICATITATATICITIGGGGACACCAGCAGGGGGGGGGG | AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAAAACATCTTCAGA | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTC | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGT/ | ACCCCATGAGGTCCTAAAGCAGGAAGGAAGCAAATGCTTAGGGTGTCAAAA | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAA | TGAAGATGATGGGAGGTCTACA |
| 5521 | 5581 5581 | 5641 | 5701 5701 | 5761 5761 | 5821 | 5881 5881 | 5941 | 6001 | 6061 | 6121 | 6181 6181 | 6241 | 6301 | 6361 | 6421 6421 | 6481 6481 | 6541 6541 | 6601 |
| Q | Qy Dp | Oy Dp | Qy Db | Oy Dp | oy B | Qy Dp | Qy Dp | Qy | Qy | Oy Dp | Oy Dp | Oy Op | oy ob | δy | Oy Dp | Qy Db | δy | |

7560 7440 7500 7500 7560 7620 7620 7740 0999 6780 6780 6840 6840 0069 0069 0969 0969 7020 7080 7140 7140 7200 7200 7260 7320 7380 ACATACACCTATGTCATTTCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGA CTTACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGGATTCTTC ttgaatcctctctctgtgttacccagtaactcatctgtcaccaagccttggggattctc GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT GCCTGACGAACTCCTTGATTTTAGCCTTCTCTTTTCATTTCCTCAAAAAGATTTCCCCAT TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG ttaggtgaggttgaagatgatgggaggtctacacagacggagcaaccatgccaagtagga AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGAAAAGA **AATGTGTTGTTAAGAAGTTAGATGAGAGGTGAGGAGACCAGTTAGAAAGCCAATAAGCAT** GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 7561 7621 7621 7681 6601 6721 6961 7021 7021 7081 7141 7141 7201 7261 7321 7321 7381 7381 7441 7441 7501 7501 7561 7681 6661 6721 6781 6781 6841 6841 6901 6901 6961 7081 7201 7261 6661 Ωp qq δy Db QY Db οy QQ Ω g Qγ q Ωÿ Db Qγ g QΥ Dp οy g δ Q QQ Op qq gg Qγ οy QΥ g οy Ω ΩŽ O D D δý

| QY | 8821 8821 | 821 TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC 8880 |
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| QY | 8881 | CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG 8940 |
| Qy | 8941 | GCTTAGAGGATGCCCAGGTCCTTCCAFGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA 9000 |
| Qy | 9001 | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA 9060 |
| 1 & E | 9061 | AAAGAGTCTTTTTTTTTTTTTTGAGACTCTATTGCCAGGCTGGAGTGCAATGGCATGAT 9120 |
| Qy Db | 9121 | CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA 9180 |
| oy do | 9181 | AGTAGCTGGGATTACAGGCGTGCACCACATGCCCGGCTAATTTTTGTATTTTTAGTAGA 9240 |
| yo, do | 9241 | GACAGGGTTTCACCATGTTGGCCAGGTGTCTCGAACTCTCCTGACCTCGTGATCGGC 9300 |
| Qy | 9301 | TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA 9360 |
| Qy Db | 9361 | AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTGACATGCACTTG 9420 |
| Oy Db | 9421 | GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT 9480 |
| QY | 9481 | ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTTTT 9540 |
| Qy | 9541 | TTAAACCATTTCTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAGTAAATGTGATTT 9600 |
| Qy | 9601 | ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTAATTA |
| Qy Dp | 9661 | TGAAAAACTATTAACAACTIGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA 9720 |
| QQ Dp | 9721 | TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC 9780 |
| S da | 9781 | ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT |
| QY | 9841 | CTITACATITIGICTIACGGAATATITICATICAACTGIGGFAGCCGAATTAATCGIGT 9900 |
| g A | 9841 | ctttacattttgtcttacggaatatttcattcaactgtgggtagccgaatcaatc |

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The present invention relates to hereditary hemochromatosis gene products. These proteins may be used to treat a patient diagnosed as having human hemochromatosis disease. It is also useful as a metal chelation agent or as a 1-cell differentiation factor, and for alleviating iron overload. They may also be used in protein replacement therapy for individuals having a defective human hemochromatosis gene.
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1; hereditary hemochromatosis; chelation agent; cell differentiation factor; iron overload; ds
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Matches 10823; Conse
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16-APR-1996;
23-MAY-1996;
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| TTCAAGACCAGCCTGGGCA | TAGGTGACACACACACACACACACACACACACACACACAC | TringadalGigadaGgAdGGAdGGA | CAGTGTAAGAATTCAGGACCAAGGG | TGGTGAAACCCCATGTCTACTAAAATT | agtcccaggttttcag | CTCAAAAAAAAAAAAAAAAAAAAAAAC | ATTTCTAGAATCCACCAGCTTTAGTC | ACCCAGGACTGTCATATGGAAGAAA |
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| 981 981 | GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA 5 | 5040 |
| 041 | GCCAAGATGGGGCACTGCACTCCAGCCTAGGCAGGTGAGACTCCATCTTAAAAA | 5100 |
| 101 | AAAAAAAAAAAAAAAAAAGAGAATTCAGAGCTATCATCATATGAATACCAGGACAAA | 5160 5160 |
| 161 161 | ATATCAAGTGAGGCCACTTATCAGAGTAGAAGAATCCTTTAGGTTAAAAGTTTCTTTC | 5220 5220 |
| 221 | AGAACATAGCAATAATCACTGAAGCTACCTATACAAGTCCGCTTCTTATAACAATGC 5 | 5280 5280 |
| 281 281 | CTCCTAGGTTGACCCAGGTGAACTGACCATCTGTATTCAATCATTTTCAATGCACATAA 5 | 5340 5340 |
| 341 341 | AGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACAGATATGTATATTTACATGTG 5 | 5400 5400 |
| 401 | AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG 5 | 5460 5460 |
| 461 | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTTCTGAAAAGGGTATTTCCTTCC | 5520 5520 |
| 521 521 | AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC 5 | 5580 5580 |
| 581 581 | CTCATCCTTCTTTTCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC FILILI | 5640 5640 |
| 641 641 | TCTTCAGIGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCGGAACATCACCATG : | 5700 5700 |
| 701 | AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG : | 5760 5760 |
| 761 761 | CAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG | 5820 5820 |
| 821 821 | CAGAGATATACGINCCAGGIGGAGCACCCAGGCCTGGAICAGCCCCTCATIGIGAICTGG | 5880 5880 |
| 881 | GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAATCTATTGGGGGTTGAGAGGAGTGCC 5 | 5940 |

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| GAGGAAAATAAGGAAGAGAGAAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT 7080 | TGGGTCTCTTGTCTCCACAGGA | ACACGCAGCCTGCAGACTCACTGTGGGAAGGAG | GCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT 7260 | CGAACTCCTTGATTTTAGCCTTCTCTGTTCTTTCCTCAAAAGATTTCCCCAT 7320 | TTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG 7380 | rGAACCTCA tgaacctca | CCTATGTCATTTC | ATGATICATITIAACAICIGAGAAAAGCIITGAACCCIGGGACGIGGCIAGICAI 7560 | ACCAGATTTTACACATGTATCTATG(| rccrcrcrgrgrracccagraacrcarcrgrcaccaagccrrggggarrcrc 7680 | GATTGTGATGTGAGTTGCAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG 7740 | TGTCCCAGAAAAAG | GGAGGCAAATATCTTGAAAGGGGTTGTGAAGAGGTGTTTTTTCTAATTGGCATGA 7860 | rCaTACAGATTTGCAA | ACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCTTGTTCTGATAATGAAA 7980 | GATAAGO gataagg | ATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT 8100 |
|---|---|---------------------------------------|---|---|---|---------------------------------------|--------------------------|--|--------------------------------|---|--|--------------------|--|---|---|--------------------------------|--|
| AGGAAA | TTTCTGGGTCT tttctgggtct | GAGTGACACGCA | GAGTGCATTT gagtgcattt | CCTGACGAACTC | CIGA | SAAC gaac | CTATG ctatg | GATTC gattc | CTTACCAGAT | CTCTC ctctc | GTGA gtga | CCCAG | SAGGC gaggc | GTGTCATACA } gtgtcataca | CCTGAA cctgaa | ATAAGC ataagg | rACTG Lactg |
| 7021 0 | 7081 0 | 41 | 7201 | 7261 | 7321 | 7381 | 7441 | 7501 | 7561 | 7621 | 7681 | 7741 | 7801 | 7861 | 7921 | 7981 | 8041 |
| oy D | Qy Db | Oy Dp | Oy Db | Qy Dp | Qy Db | Oy Dp | oy O | oy D | oy ob | oy Ob | Q D | Qy | Qy Db | Oy Db | Oy Db | Oy Dp | oy do |

9120 9180 9240 8880 8940 8940 9000 0006 0906 9060 9120 9180 8640 8700 8760 8760 8820 8820 8880 8460 8520 8580 8580 8700 8400 8400 8460 **AGTAGCTGGGATTACAGGCGTGCACCATGCCCGGCTAATTTTTGTATTTTTAGTAGA** CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTTTGCTTTGCATTCA CCTCAATGAAGTGGAGTAAGCTCTCTTTTGAGATGGTATAATGGAAGCCACCAAGTG AAAGAGTCTTTTTTTTTTTGAGACTCTATTGCCCCAGGCTGGAGTGCAATGGCATGAT CICGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA GAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC ACGCCTGTAGTCCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG TTCTTTTTAAATGAAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC **AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC** 9061 9181 8881 8941 8941 9001 9001 9061 8761 8761 8821 8881 9121 9121 8581 8641 8641 8701 8701 8401 8461 8461 8521 8581 8341 8521 8101 8221 8221 8281 8281 8341 8401 8101 8161 8161 g qq Οy g ŏ g QY Q δy οy O.Y δλ Dp QΥ Ob QΥ С Dp Op QQ οy g οy g Qγ С Qγ qq δŻ Dp οŽ ò ΩÝ

| Db 10261 tttttcc Oy 10321 CATTTT Db 10321 cattttc Oy 10381 GGGTGA Db 10381 GGGTGA | 10441 | Db 10501 atcact; Qy 10561 CTATTTC Db 10561 ctatttc Qy 10621 AAGGAAA | 10621 10681 10681 | OY 10/41 CAGTATY Db 10741 cagtatt OY 10801 TAAAATC Db 10801 taaaatt | RESULT 4 | XX DE Human heredi XX KW HH; heredita KW T-cell diffe XX OS Homo sapiens XX | | PR 16-APR-1996; XX XX PA (BIRA) BIO- XX PI Thomas WJ, PI Feder JN; XX WPI; 2001-00 | P-PSDB; A |
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| 9181 agtagctgggattacaggcgtgcaccaccatgcccggctaatttttgtatttttagtaga 92 9241 GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGCACCTCGTCACCTGGTCGCC 93 | 9301 Ugcctcggcctcccaaagtgctgagattacaggtgtgagccaccctgcccagccgtcaaa 9360 9361 AGAGTCTTAATATATATATCCAGATGCCATGTGTTACTTAATGTTACTACATGCACTTG 9420 | | 9341 ITARACCATTITITICIGGTRAGAAAGTTATGTAGAAAAGTAAAGTGTGATTT 9600 9541 ttaaaccattttcttttttgttgtttagaaaagttattgttgaaaaaagttaaatgtgattt 9600 9601 ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGTTATTAATTA | 9661 TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA 9720 | 9781 ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGCAGACATTATTTTGCTTCTAATTT 9840 9781 ATCTTGTGTATATCTTAATTTT 9840 9781 ATCTTGTGTATATCTTAATTTT 9840 9781 ATCTTGTGTATATCTTAATCTTGTGTTT 9840 9841 CTTTACATTTGTTTAATCGTAATTTTCATTCATTCATTGGTAGCCGAATTAATCGTGTT 9900 11111111111111111111111111111111 | 9901 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC 9960 | CTGCTATAAGGCTTCACTTACTCTACCTCATAAGGAATATGTTACAATTATT 1008 | 10081 aggtaagcatttgttttatattggttttatttcacctgggctgagatttcaagaaacacc 10140 10141 CCAGTCTTCACAACATTTCACTAACACTTTACTAAACATCAGCAACTGTGGCCT 10200 10141 CCAGTCTTCACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT 10200 10141 ccagtcttcacagtaacacatttcactaacacatttactaaacatcagcaactgtggcct 10200 10201 GTTAATTTTTTAATAGAAATTTTAAGTCCTCATTTTCTTTC | 10261 TTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG 10320 |
| dy dy dy | 6 6 6 | op ox | da ya | OY OY Ob | OY OY OY | OY Db Oy Db | Oy Db | 90 AO AO | Οy |

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                                                                                        AGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGGCGTGCACTGGAA 10500
                                                                                                                                           ITGTAGAGAAAAGCCCCTGAAAATTTGAGAAAACAAACAAGAAACTACTTACCAG 10560
                                                                                                                                                                                             GGTACAGGCCAAAATTCTTATGTTGTATTATAATAATGTCATCTTATAATACTGT 10740
                                                                                                                                                                                                                                                                                                                                                      Wolff RK;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New hereditary hemochromatosis gene products or polypeptides, useful
                                                                           ACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG
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B36872.
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The present invention relates to hereditary hemochromatosis gene products. These proteins may be used to treat a patient diagnosed as having human hemochromatosis disease. It is also useful as a metal chelation agent or as a T-cell differentiation factor, and for alleviating iron overload. They may also be used in protein replacement therapy for individuals having a defective human hemochromatosis gene.
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                 chelation agent alleviating iron overload
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099 099 720 Gaps 240 360 420 420 480 480 540 540 9 120 180 240 300 300 360 9 9 TTACTGGGCATCTCCTCAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCCG ATGGGCCCGCGAGCCAGGCCGCGCGTTCTCCTCTGATGCTTTTGCAGACCGCGGTCCTG CAGGGGCGCTTGCTGCGTGAGTCCGAGGGCTGCGGGCGAACTAGGGGCGCGCGGGGGTG GAAAAATCGAAACTAGCTTTTTCTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC TCAACCCTATCCGCAAGCCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGC CTACCACTGAACTGCAGATAGGGGTCCCTCGCCCAGGACCTGCCCCTCCCCCGGGCTGT CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT **TCTAAGGTTGAGATAAAATTTTTAAATGTATGAATTTTTGAAAATCATAAATTTTA AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT** TCAGGATTTAAAAACCAAGGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT CTGCTGTAGGAGAGAGAACTAAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT ; 0 Length Indels 22; DB 0; Mismatches Score 10823; Pred. No. 0; Query Match
Best Local Similarity 100.0%;
Matches 10823; Conservative _ 541 541 61 61 121 181 241 241 301 301 361 361 121 421 481 481 601 601 99 21 181 q q q D ò g QQ g ò ò ò ò g ò οy ò ò a ð g δ q ò g

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1500 1620 1800 960 TAATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATCTGATCTTATTTGA ATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACACCACTTTGAGTTTTGGTA CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC CAAGGGAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG CTAGGCTTTATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA TTTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGGCGCGCAAAGAGTGGCGTTGGGGA TCTGAATTCTTCACCATTCCACCCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT aactcgggtttatttccaatgtcagctgtgcagttttttccccagtcatctccaaacagg AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGCAGGATCCGCACGG 1621 1681 1741 1801 1801 1861 1861 1321 1381 1441 1501 1561 1561 1621 1681 1741 1261 1321 1381 1441 1021 1021 1081 1141 1141 1201 1201 1261 1501 196 1081 781 901 901 196 g Dp Db d gg QΥ Db Οy g ò QQ QΥ Db Qγ g Qγ QQ Óχ ΩD Qγ g Óγ Db ρý g Q Q δý Q δ qq ٥y Op οy ò

| 2y 1921 | PAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG 198 |
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| 1981 | TTGGATTAAAAGCGGGTTTCTCAGCACTACTCATGTGTGTG |
| 2041 | CGGCGTGGGGGTGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTG |
| 2101 | CCICCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAATGTCT |
| 2161 | AAACTITGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA 2 |
| 2221 | AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGG |
| 2281 | GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA 2340 |
| 2341 | ACAGTGATCTGTCACAGGCTTTTAAAAGATHGCTCTGGCTGCTATGTGGAAAGCAGAATG 240 |
| 2401 | AAGGGAGCAACACTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG 2460 |
| 2461 | AGGTAGTGGAGTGGGCTGGGGAACAGAAAAGGAGTGACAAACCATTGTCTCCTGAA 2520 |
| 2521 | TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAGAGAAGAATTGG 2580 |
| 2581 2581 | CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGCAGCAGTTCCTGAGCTCAGGA 2640 |
| 2641 | ICTCTACAAAAATACAAAAT ctctacaaaaatacaaaaat |
| 2701 | GCTGGGTGGTGGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA 2760 |
| 2761 | CTGTGCCACTGTACTTC |
| 2821 | AAAAGAGAAGAGTTAAA |
| 2881 | TGACTITGITCITIATITIAAITITATTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT 2940 |
| 2941 | AGTTTGGGGTAAATCAAGGATCTGCATTTG 300 |

| QY | 3001 | GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT 30 | 090 |
|----------|--------------|---|-----|
| Qy | 3061 | CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT 31 | 120 |
| QY | 3121 3121 | TIGGIGGCIGAGGCAGGTAGATCATITGAGGICAGGAGITIGAGACAAGGITGGCCAACA 3 | 180 |
| Qy | 3181 | TGGTGAAACCCCATGTCTACTAAAAATACAAAATTAGCCTGGTGTGGGGGGCGCCCT 3 | 4 4 |
| Qy | 3241 3241 | CCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG 3: | ōō |
| Qy Dp | 3301 3301 | ###################################### | 9 9 |
| Qy | 3361 3361 | rcAG tcag | 120 |
| QY | 3421 3421 | TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACTTAAC 34 | 180 |
| Qy Db | 3481 3481 | ATTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 35- | 540 |
| Qy Db | 3541 3541 | | ÕÕ |
| Qy | 3601 3601 | NGACAGGACTGCAACTCACCTTCACAAAATGAGGA 36 | 9 9 |
| Qy | 3661 3661 | CCAGACACAGCTGATGGTATGAGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCCC 37; | 720 |
| Qy | 3721 3721 | STRGCTCTGTCTCCAGGTTCACACTCTCTGCACTA 37 | |
| Qy Db | 3781 3781 | rrgaagcrrrgggcra 38 | 4 4 |
| Qy Db | 3841 | SATNATGAGAGTCGCCGTGTGGAGCCCCGAAC 39 | o o |
| Qy | 3901 3901 | TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCTGAA 396 | 091 |
| Qy | 3961 3961 | AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACACAAG 40; | 20 |
| Oy Db | 4021 | CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 406 | 80 |
| οy | 4081 | GGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAAGGAAGGGAAGGGAAG 41 | 40 |

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| 4140 | 4200 | 4260 | 4320 | 4380 | 4440 | 4500 | 4560 | 4620 | 4 680 4680 | 4740 | 4800 | 4860 | 4920 | 4980 | 5040 | 5100 5100 | 5160 | 5220 |
| | GAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT | TGGTTGCAGTTAACAAGGCTGGGGATTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG | GGCTGTGAAATGCAAGAAGAACAACAGTACCGAGGCTACTGGAAGTACGGGTATGATGGG | AGGACCACCTTGAATTCTGCCCTGACACACTGGATTGGAGA | TGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGGCAGAACAGGCCTAC | CTGGAGAGGACTGCCCTGCACAGCTGCAGTTGCTGGAGCTGGGGAAGGGTTTTG | GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG | AGGTTGCAGGGCACGGA | TCCAAA ccaaa | TGAGACAGCCACAAGT tgagacagccacaagt | GTCTATGGCCCTTGCTTTTTATTTAACCA | AATG | 1 AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA | CGTCTCTAAAAAATACAAA | rGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTT | 1 GCCAAGATGGGGCCACTGCACCTAGGCAGCAGAGTGAGACTGCATCATAAAAAA | AAAAAAAA | |
| 4081 | 4141 | 4201 | 4261 | 4321 | 4381 | 4441 | 4501 | 4561 | 4621 | 4681 | 474] | 4801 | 4861 | 4921 | 8 8 | 504 | 5101 | 516 |
| qq | Qy Db | Qy Db | QY Db | Oy Db | Qy Dp | Qy Db | oy Dp | Qy Db | Q Dp | O D | Oy Db | Qy Db | Qy Dp | Oy Dp | Qy Db | Oy Dp | Oy Dp | γo |

5880 0009 6180 6240 6300 6300 5700 5880 5940 0009 0909 0909 6120 6120 6180 5580 5640 5700 5760 5760 5460 5460 5400 5400 5520 CAGAGATATACGINCCAGGIGGAGCACCAGGCCIGGATCAGCCCCTCATIGIGAICTGG TGTTCATAATATTAAGGAAGAAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT acacaaaatggtgtctctcctgtagcttgttttttctgaaaagggtatttcttcctcc CTCATCCTTCCTTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC TCTTCAGTGACCACTCTACGGTGTCGGGCCTTCAACTACTACCCCCAGAACATCACCATG CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTTGTCGTCATCGTTCATTGGAATTT AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC CTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCAATCATTTCAATGCACATAA AGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACAGATATGTATTTACATGTG AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC 6181 6181 5881 5941 6001 6061 6061 6121 5701 5761 5821 5821 5881 5941 6001 5641 5701 5161 5221 5281 5281 5341 5341 5401 5401 5461 5461 5521 5521 5581 5581 5641 5761 5221 q ď QY Db g g g qq οy Q Q ð Q Σ ą ≿ ð ζ ą ₹ ð ž q $\stackrel{>}{\sim}$ g ₹ g λ 2 27 27 7 ζ ΩŽ

| 6360 | 6420 6420 | 6480 | 6540 6540 | 0099 | 0999 | 6720 6720 | 6780 | 684 0 684 0 | 0069 | 9 | 7020 | 7080 | 7140 | 7200 | 7260 | 7320 | 7380 |
|---|---|---|---|---|--|--|---|--|--|--|--|--|---|---|--|--|--|
| . AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT | . TTTCCAAGACTGTFTAACGTAGTACAGGGCCTTTGAGGTTGAGAACTCACTGTGGCTAT | . TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTTAAAGAAG | ACCCCATGAGGTCCTAAAGCAGGAAGCAAGCAATGCTTAGGGTGTCAAAGGAAAGAATG | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAGAGCTGGATTCCA | TTAGGTGACGTTGAAGATGATGGCAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT | AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGAAAAAA | GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATATGGTG | AATGTGTTGTTAAGAAGGTTAGAGAGGTGAGGAGCCAGTTAGAAAAGCCAATAAGCAT | TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG | GTGAATGAGGAAAATAAGGAAGAGAGAGGGGAGATGGTGG | CTITCCTGGGTCTCTTGTCTCCACAGGAGGACCATGGGGCACTACGTCTTAGCTGAACGIIIIIIIIII | TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGAAAAAAAA | GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT | GCCTGACGAACTCCTTGATTTAGCCTTCTGTTCATTTCCTCAAAAGATTTCCCCAT | TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG |
| 6301 | 6361 6361 | 6421 | 6481 | 6541 | 6601 | 6661 | 6721 | 6781 6781 | 6841 6841 | 6901 | 6961 6961 | 7021 | 7081 | 7141 | 7201 | 7261 7261 | 7321 |
| Qy | Oy Db | Oy Db | Qy Db | Qy | Qy Db | Qy | QY | Qy Db | Qy | Qy Db | Qy | Qy Db | Qy | Qy Db | Qy Db | Qy Db | Oy Dp |

| 7381 TCTCTC 7381 TCTCTC 7441 ACATAC 7441 ACATAC 7501 CTTACA 7501 CTTACA 7501 CTTACA 7621 TTGAA 7621 TTGAA 7621 TTGAA 7621 TTGAA 7621 TTGAA 7621 TTGAA 7621 TTGAA 7621 TTGAA 7631 AGGTC 7631 AGGTC | |
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| | TGATACATCTCAGACACCACTACATTCAGTAGTTTACATGCCTAGAATAAATA | AAGGAGATGGCTCTTCTTGTCTCATTGTGTTTCTTCTGAGTGAG | GGGAACAGCAGAAAACAACCAACTG | TGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGC | TCTTTGGACCCTACGCAAGGACTGTAATT | CACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAG | TCAATGAAGTGGAGTAAGCTCTCTCATTTGAGATGGTATAATGGAAGCCACCAAGTG 8940 | TTAGAGGATGCCCA | | SAGTCTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT 912: | GGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA 918 | SPAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTGTATTTTAGTAGA 9240 | CAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAA | SCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA 9360 | AGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTAC | TGCATAAATGTGGTACAAGCATTCTGTC | AGCTCAGAAGTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTC | aaaccattttcttttttggggtagaaagttatgtagaaaagtat 960 |
|------|---|--|-------------------------------|---|-----------------------------------|---|--|-----------------------|----------|---|--|--|---|--|---|----------------------------------|---|--|
| agt. | at — H | 39 | 99 10 10 | GAA gaa | 5=5 | ACA I I | aa – R | rAG rag | () () | AG - B | 980 980 980 | 35 – 35 9 – 35 | AGG | CIC CIC | AGTC agtc | GCA | AGCT agct | AAAC |
| 8461 | 8521 8521 | 8581 8581 | 8641 | 8701 8701 | 8761 8761 | 8821 | 8881 | 8941 | 9001 | 9061 | 9121 | 9181 | 9241 | 9301 | 9361 | 9421 | 9481 | 9541 |
| qq | Qy Dp | Qy Dp | S q | 0y Db | Cy Op | Qy Dp | 67 12 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15 | oy B | Qy Dp | 0y 0p | Oy Db | oy Op | Oy Dp | 0y 0b | Oy Db | Q Q | oy Ob | οy |

10440 10440 10500 10560 10020 10080 10140 10200 10260 10260 10320 10380 10380 10620 10620 10020 10080 10140 10320 10500 10560 AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680 0966 9780 0066 0066 CATTCTGAAAGCATATGACAAATTATTTCTCTTAATATCTTACTAATACTGAAAGCAGA CTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACAACAG ttaaaccattttcttttttgtggttagaaagttatgtagaaaaagtaaatgtgattt AGGTAAGCATTTGTTTTATATTGGTTTTTTTTCACCTGGGCTGAGATTTCAAGAAACACC TITITCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG CATITITAAATICITATICACCICIGGCAAAACCATICACAAACCATGGTAGTAAAGAGAA TATACTITAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA CTITACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT **ACCCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAAGCTGTTATTTAATTAGCCAG** 10441 10501 10561 9541 9661 9781 9841 9841 9901 1966 9961 10141 10201 10261 10381 10501 10561 10621 9601 9601 1996 9721 9721 9781 9901 10081 10201 10261 10381 10441 10021 10021 10081 10141 10321 10321 g qq οp Ωp QΫ́ qq δ g Qγ Dp Qγ g QY Db Ω g Ωÿ g δy q Q_{Y} g òγ g Ω QQ ò QQ Ω qq δy Dp ò ÓΫ Ωÿ ΟY

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"G to A substitution (24d1 mutation
associated with HH), results in Cys
Tyr substitution"
                                                                                                                                                                                                                                                                     g "C to G substitution (24d2 mutation) results in His to Asp substitution"
                                                                                                                                                                                                                                                                                               "A to T substitution (24d7 variant) results in Ser to Cys substitution'
                                                                                                                               Hereditary haemochromatosis; metal toxicity; diagnosis;
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/*tag= a
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                                                    10801 TAAAATCCCCAAATTTTTCATAAAC 10825
                                                                                                                   Hereditary haemochromatosis gene.
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Tresults in a Cys Tyr substitution in the encoded protein (see AAM3649) at a critical disulphide bridge important for secondary structure. The following are claimed: the HH genomic DNA (1), a 1437 bp cDNA sequence (Ia) (see AAM36691) and their 24d1, 24d2 and their case of the HH gene product, its variants: a cloning or expression vector; host cells; a peptide product chosen from the HH gene product, its variants (24d1, 24d2 and 24d7), or a peptide of at least 56 amino acid to determine the presence or absence of the common HH gene cutation; an animal model for the H disease; metal chelation agents, T-cell differentiation factors and therapeutic agents for the mitigation of injury due to oxidative process in vivo or the reapeutic agents for activity in connection with HH disease; an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
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                                                                                                                                                                                                                            Hereditary haemochromatosis gene and variants - useful for diagnosis
                                                                                                                                                                                                                                                                                                                                                                                                          This genomic DNA sequence corresponds to the human gene whose mutated form is associated with hereditary haemochromatosis (HH). To identify this novel gene, allelic association patterns were determined between known markers and the HH locus in the HLA region of chromosome 6. A physical clone coverage was then generated extending from D65255, which is a marker that is centromeric of the HLA-A, in a telonmeric direction through D65276, a marker at which the allelic association was no longer observed. A single mutation (24d1) in the HH gene appears responsible for the majority of HH disease. This comprises a G to A substitution that is present in 86% of affected chromosomes and in 4% of unaffected chromosomes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     antisense oligonucleotide directed against a transcriptional product of a nucleic acid sequence as above; and oligonucleotides or pairs of oligonucleotides covering a range of nucleotides from (1), (1a) or their variants, useful for detecting a polymorphism in the HH gene. The invention also relates to methods for screening for HH homozygotes, to HH diagnosis, prematal screening and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGCTGTAGGAGAGAGAGAGTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT
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   Gnirke A, Ruddy D, Thomas WJ;
                                                                                                                                                                                                                                                                    and treatment of hereditary haemochromatosis disease
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Matches 10819; Conservative
Drayna DT, Feder JN, Gn
Tsuchihashi Z, Wolff RK;
                                                                                                              WPI; 1997-512743/47.
                                                                                                                                                     P-PSDB; AAW36499
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| AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT [| #gotggggattacagggggggggcacaccatgccggctaattttgtattttaggggtattcaccagggctaattttaggattacagggctaattttaggattacagggctaattttaggatttcaccaggctaggtctcgaactctccacacctcgacctcgtattll | ATGTGTTTACTTTATGT | ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTTCTTTTT acagctcagaagtttcttcttctttaggcattaaattttagcaaagatatctcatcttctt TTAAACCATTTTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAAGTAAATGTGATTT IIIIIIIIII | ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG 111111111111111111111111111111111 | TATACTTAAAAATGTATGTAATGTAAACGCATGATTTATTGTAGTGTCTTGTTC | CTTTACATTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT CLLtacattttgtcttacggaatattttcattcaactgtggtagccgaattaatcgtgtt ctttacattttgtcttacggaatattttcattcaactgtggtagccgaattaatcgtgtt TOTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTACCAGCAAC | CATTCTGAAAGCATATGACAATTATTCTCTTTAATATCTTACTATACTGAAAGCAGA | GGTAACCATTGTTTATATTGGTTTTATTTCACCTGGGCTGACATTT |
| 061 061 121 121 121 | 9241 0 9241 0 9301 7 9301 t | 9361 p 9361 a 9421 q | 9481 g 9481 g 9541 T | 9601 8 | 721 721 721 781 | 9841 C 9841 C 9901 T 9901 t | 9961 G | 081 |
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10201 GITAATTITITAATAGAAATTITAAGTCCTCATTITCTITTCGGTGTTTTTAAGCTTAA 10260 10261 TITITCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG 10320 CATITIDAATICITATICACCICIGGCAAAACCATICACAAACCATGGTAGTAAAGAGA 10380 10321 cattttaaattettatteaeetetggeaaaaeeatteaeaaaeeatggtagtaagaaa 10380 10381 GGGTGACCACGGGGCCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG 10440 10440 10441 CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAAATGGGTGGAGGGGCGTGCACTGGAA 10500 10561 CTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACAACAG 10620 10621 AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680 10681 TGAGAGGTACAGGCCAAAATTCTTATGTTGTATTATAATAATGTCATCTTATAATACTGT 10740 Human; histocompatibility iron loading protein; HFE protein; major histocompatibility complex; non-classical class I gene; chromosome 6p; iron disorder; haemochromatosis; ss. Genomic DNA of a histocompatibility iron loading (HFE) gene. Location/Qualifiers 1028..1324 "*tag= a /number= 1 1325..4651 /*tag= b /number= 1 4652..4915 10801 TAAAATCCCCAAATTTTTCATAAAC 10825 BB AAA96794 standard; cDNA; 12146 (first entry) Homo sapiens. 19-FEB-2001 AAA96794; intron Ø 10501 10321 10261 Key exon QQ g QY Op Ω. οp ΩŸ g Óγ οg QΥ qq οχ QQ ΟŽ QQ g ÓΥ ò Dp

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                                                                                                                                                                                                                                                                                                                                                                                                                        Diagnosing an iron disorder e.g. hemochromatosis or a genetic susceptibility to develop it, by determining the presence of a mutation in exon 2 or an intron of a histocompatibility iron loading nucleic acid -
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TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCG
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                                                           AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT
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1081 GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG 1140

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4;

Gaps

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Length 12146; . 8

DB 21; 6

Score 10759.8; Pred. No. 0; 0; Mismatches

Query Match 99.4%; Best Local Similarity 99.8%; Matches 10812; Conservative

| 114 | 1 CTAGGCTTTATTGATTTGCAATGTGCTGTAATTAAGAGGCCTCTCTACAAAGTACTGA 1200 |
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| 120 | 1 TAATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATGTGATCTTATTTGA 1260 |
| 126 | 1 TTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTACTAGAAGTTAACT 1320 |
| 132 | 1 GGAATTCAGATTATAAACTCTTTTCAGGTTACAAAGAACATAAATAA |
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| 144 | 1 TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACAGCACTTTGAGTTTTGGTA 1500 |
| 150 | 1 CTACGTGTATCCACATTATACACATGACAAGAATGAGGCATGGCAGGCCTGCTTGT 1560 1560 1111 |
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| 162 250 | 1 TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG 1680 |
| 168 256 | 1 AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC 1740 |
| 174 | 1 CAAGGGAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA 1800 |
| 180 | 1 GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA 1860 |
| 186 | 1 GAAGCAGAGAAGTCAGGGCAAGTCACTGGGGCTGACACTTGAGCAGAGACATGAAGGA 1920 |
| 192 | 1 AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAACTGAGTGGGCCTGGCAAG 1980 |
| 198 286 | 3TTTTCTCAGCACTACTCATGTGTGTGTGTGTGTG |
| 204 | 1 CGGCGTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG |
| 210 | 1 CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCGGTCTTGACCAACCA |
| 216 | AGACAAACTCCTGGTTA |

2400 2460 3407 2580 3467 2640 2700 3587 2760 3647 3707 2880 3767 3827 3000 3060 3120 4006 3180 3300 aaactttgccacatgtcacctagtagacaaactcctggttaagaagctcgggttgaaaaa 3107 GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGTGAATTCTAGCCAAGGAGTA AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG AGGTAGTGGAGTGGGCTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA GITCAAGACCAGCCIGGGCAACACACAGCAAAAAACCCCITCTACAAAAAATACAAAAATTA GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA TTCTGAGATGGTGAAGGCAGAGGAAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGA ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGCAGATTCCTGAGCACACA TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC CTAGGTGACAGAGCAAGACCCTGTCTCCCCTGACCCCCTGAAAAAGAGAAGAGTTAAAGT TGACTTTGTTCTTTATTTTATTTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT TGGTGAAACCCCATGTCTACTAAAATACAAAATTAGCCTGGTGTGGTGGCGCACGCCT 3108 2281 3168 2341 3228 2401 3288 2461 3348 2521 3408 2581 3468 2641 3528 3588 3648 3708 2881 3768 2941 3828 3001 3947 4007 3241 3048 2701 2761 2821 3887 3061 3121 3181 4067 4127 g Qy g οŻ g δ Dp δy g Οy g δ g Qγ Op δ Db δy QQ ÓΫ Op q Dp d qq Op δ Dp Op q δy Ω Ω οy Qγ δ ò

| GACTCTGT 3360 gactctgt 4246 | TCAGGATT 3416 tcaggatt 4306 | ACACACCT 3476 acacacct 4366 | GGAATA 353. | CAAGGAAA 3596 caaggaaa 4486 | ACAAAATG 3656 acaaaatg 4546 | CATCCTGC 3716 catcctgc 4606 | CTCTCGC 3776 ctctctgc 4666 | AGCTTTGG 3836 agctttgg 4726 | GGAGCCCC 3896 ggagccc 4786 | TCAGAGTC 3956 tcagagtc 4846 | TCACAACC 4016 tcacaacc 4906 | TTTCATCT 4076 ttcatct 4966 | GGAAGAGG 4136 ggaagagg 5026 | GACCTATT 4196 gacctatt 5086 | CAGGTCAT 4256 caggtcat 5146 | 3GGTATGA 4316 999tatga 5206 | 3AACCCAG 4376 gaacccag 5266 |
|---|---|---|--|---|---|---|--|---|---|--|--|--|---|--|---|---|---|
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| 3301 | 3361 | 3417 | 3477 | 3537 | 3597 | 3657 | 3717 | 3777 | 3837 | 3897 | 3957 | 4017 | 4077 | 4137 | 4197 | 4257 5147 | 4317 |
| Qy Db | Qy Db | Qy Dp | Qy Db | Oy Dp | QY Db | oy Og | Oy Dp | QY Db | Qy Dp | Oy Db | Qy Db | Qy Db | Qy Db | QY | QY Db | Qy Dp | Qy |

| QJ | 4377 | GGCCTGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGCCCAGGCAGG | 532 |
|----------------|--------------|--|--------------|
| Qy Db | 5327 | CTACCTGGAGAGGACTGCCCTGCACAGCTGCAGCAGTTGCTGGAGCTGGGGAGAGGTGT. | 538 |
| QY | 4497 | AACAAGGTATGGTGGAACACACTTCTGCCCCTATACTCTAGTGGCAGAGT - | 455 |
| Qy | 55 | AGGAGGTTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGTGTGTG | 461 |
| QY | 61 | | 67 |
| qa | 5507 | ctctccaaattctgggaagggactttctcaatcctagagtctctaccttataattgaga | 29 |
| Qy | 4677 | TGTATGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAG | 4736 |
| QY | 4737 | AGTCTATGGCCCTTGCTTTTATTTAACCAATAATCTTTTGTATATTTATACTG | 4796 |
| Qy | 4797 | NAATTCAGAAATGTCAAGGCCGGCACGGTGGCTCACCCCTGTAATCCCAGCACTT | 85 |
| Qy | 4857 | 16GGAGCCCGAGGCGGGTGGTCACAAGGTCAGGAGTTGAGACCAGCCTGACCAACATGG | - 0 |
| Qy Db | 4917 | VTACAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGT | 4976 |
| Qy | 4977 5867 | TGAACCTGGGAAGCGGAAGTTGCA | 5036 |
| Qy Db | 5037 5927 | CACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAA | 5096 |
| Qy Db | 5097 | ATGAATACCAGGA | 5156 |
| Qy Db | 5157 | CAAAATATCAAGTGAGGCCACTTATCAGAGTAGAAGAATCCTTTAGGTTAAAAGTTTCTT ; | 5216 |
| Qy | 5217 6105 | CTTACAAGTCCGCTTCTTATAACA | 5276 |
| O _Y | 5277 6165 | ATGCCTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCAATGATTTTCAATGCAC : | 5336 6224 |
| Qy Db | 5337 6225 | -AGAACAAAGAACATGGGTAACAGATATGTATATTTACA | 5396 6284 |
| Qy | 5397 | TGTGAGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCT : | 5456 6344 |
| Qy | 5457 | CACAAAATGGTGTCTCTCCTGTAGCTTGTTTTTTTTGTGAAAAGGGTATTTCCTTC | 5516 |

| taggacacaaaatggtgtctctcctgtagcttgtttttttctgaaaagggtatttccttctgaacacaaaatggtgtctctcctgtagcttgtttttttctgaaaagggtatttccttcc | | CATGAAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGT 5756 | ATTGCCCAATGGGGATGGGACCTACCAGGCTGGATAACCTTGGCTGTACCCCCTGGGGA 5816 | AGAGCAGAGATATACGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGAT 5876 | CTGGGGTATGTGACTGATGAGAGCCAGGAGCTGAGAAATCTATTGGGGGTTGAGAGGG 5936 | TGCCTGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCT 599 | GAGGGTGGCAATCAAAGGCTTTAACTTGCTTTTTCT | / ACCCTAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGA 6116 | ATTTGTTCATAATA | CTCTTAGTACCTCTGCCCCAGGCACAGTGGGAAGAGGGGCA | TGGGAAGCATTTTTCTCATTTATATTCTTTGGGGACACCAGCAGCAGCTCCCTGGGAGACAGA 62 | 7 AAATAATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAAACA | CTATTTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGG 64. | CTATICTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGATAAA 647 | 7 GAAGACCCCATGAGGTCCTAAAGCAGGCAGGAAGTGATTAGGGTGTCAAAGGAAAG 6536 | 7 AATGATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGAT 6596 |
|--|-----------------------------------|---|--|---|---|--|--|---|-----------------------------|---|--|---|--|--|---|---|
| | 65 tct 37 GAC 111 25 gac | 97 CAT 85 cat | 57 ATT 45 att | 17 AGA 19 | 77 CTG 65 ctg | 37 TGC 25 tgc | 97 GAG 85 gag | 57 ACC 45 acc | 17 ATT 05 att | 77 CTC 65 ctc | 37 TGG 25 tgg | 97 AAA 85 aaa | 57 CTA 45 cta | TA L | GAA gaa | F |
| Db 63 Qy 55 Db 64 Qy 55 | 64 56 65 | Oy 56 Db 65 | Qy 57 Db 66 | Qy 58 Db 67 | Qy 58 Db 67 | Oy 59 Db 68 | 0y 59 Db 68 | Qy 60 Db 69 | Qy 61 Db 70 | Qy 61 Db 70 | Qy 62 Db 71 | 0y 62 Db 71 | Qy 63 Db 72 | Oy 64 Db 73 | Oy 64 Db 73 | oy 65 |

7436 7556 1676 7136 7256 7316 7376 7496 8444 7076 7196 8264 8324 8384 8504 8024 8144 8204 8564 9219 7664 7784 7904 7964 7484 GGGACTTACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAG TCATAACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTT GCATTTCCAGATGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAG AACGTGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCA AAGAGGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGA AATTGCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAGATTTCC CCATTTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGA **AAGAGAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTT** GGTGAATGTGTTAAAGAAGTTAGATGAGAGGTGAGGAGACCAGTTAGAAAGCCAATAA ATGGGTGAATGAGGAAAATAAGGAAGAGAGAAGAGGCAAGATGGTGCCTAGGTTGTGAT GCGTAGCTATCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTTAGGGAA aatgatcacattcagctggggatcaagatagccttctggatcttgaaggagaagctggat **AGGAGAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTT** TCCATTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGT 8445 8205 7377 7437 8325 8385 7845 7965 8025 8085 7257 8145 8265 7497 7557 7017 7197 7317 7425 7485 7545 6717 7605 6777 7665 6837 7725 6897 7785 6957 7905 7077 7137 6597 6657 Q g q g q δ QQ Dp ò g QΥ Dp δy qq òγ a QY Ωp ογ g ŏ g Oy Db Qy Db òγ g QΥ Q Οý ò δý Qγ Qγ οy

| 7736 | 7796 8684 | 7856 8744 | 0 | 7976 | 8036 | 8096 | 8156 | 8216 9104 | 7 | 8336 9224 | | 8456 9344 | 8516 9404 | 8576 9464 | 8636 9524 | 8696 9584 | 8756 9644 |
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| CTTCCATCTGATTGTGATGTGAGTTGCACGAGCTATGAAGGCTGTACACTGCACGAATGGA | AGAGGCACCTGTCCCAGAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGGGTGTTT | TAGCAGGTAGGAGGCAAATATCTTGAAAGGGGTTGTGAAGAGGGTGTTTTTTCTAATTGGC | ATGAAGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTA | GTATTCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTC | GAAAATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTA | CTTACATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCC | CCATTTCTTTTTAAATGAAAAGTGAAGTGAGCCGGGCACGGTGGCTCACGCCTGTAA | TCCCAGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCC | TGCCTAACATGGTGAAACCCCATCTCAATAAAAATACAAAAATTAGCTGGGCGTGGTG | GCAGACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAG | GAGGCAGAGCTTGCAGTGAGCGGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGT | GAGACTCCATCTCAAAAAAATAAAAATAAAAATAAAAAAAA | AGTATACAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCGAACTCAGTCAATCTG | ACCGTTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | AGAAGGAAGGAGATGGCTCTTCTCTTGTCTCATTGTGTTTCTTCTTCTGAGTG | ACATGAAGGGGAACAGCAGAAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAA | AGTCCCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCT |
| 7677 | 7737 8625 | 7797 8685 | 7857 | 7917 8805 | 7977 8865 | 8037 | 8985 | 8157 9045 | 8217 9105 | 8277 9165 | 8337 9225 | 8397 9285 | 8457 9345 | 8517 9405 | 8577 9465 | 8637 9525 | 8697 9585 |
| Oy Dp | Qy Db | Qy Dp | Qy | Oy Db | Oy Dp | Qy Dp | Qy | Qy | Qy Dp | Qy Db | Qy | ΟΥ Db | QV | Qy | Qy | Qy Db | Qy Db |

10124 10184 10544 10724 9116 9236 9356 9416 9476 10424 9116 10604 8816 9704 9026 9656 9886 TTCATTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCT AAAAAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATG TTCAAAAGAGTCTTTTTTTTTTTTTGGGCTCCAGGCTGGAGTGCAATGGCA TGATCTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCT CCCAAGTAGCTGGGATTACAGGCGTGCACCACCATGCCGGGCTAATTTTTGTATTTTAG TAGAGACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATC CGCCTGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGT CAAAAGAGTCTTAATATATATATCCAGATGGCATGTTTACTTTATGTTACTACATGCA ATTTACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAG CCAGTGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAA TGCATATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTT ATTTCTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCG TTTCCCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCA **AGTGGCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAA** TCTTTTAAAACCATTTTCTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAAGTAAATGTG 9645 8757 9765 9825 8997 9177 9537 9597 8817 9705 8877 8937 9885 9057 9945 9117 9237 10125 9297 10185 9357 9417 9477 10425 9717 9837 10245 10305 10365 9777 10005 10065 10485 9657 10545 10605 10665 qq g QQ qq QQ Ωp g Q g δŻ Qy Db ōγ δy g ΟŽ οy Qγ QY δy Qγ g g qq Qγ qq q q δy Ω δý Qγ d QΥ 03 ò

Hereditary haemochromatosis subregion from an HH affected individual

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                                                                       CAGACTGCTATAAGGCTTCACTTACTCTTCTACCTCATAAGGAATATGTTACAATTAAATT
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The present invention describes hereditary haemochromatosis gene products from the human haemochromatosis gene. The present sequence represents a hereditary haemochromatosis subregion from an hereditary haemochromatosis subregion from an hereditary haemochromatosis with a presence or absence of the common hereditary haemochromatosis (HFE) gene mutation in an individual comprising: haemochromatosis (HFE) gene mutation in an individual comprising: cap providing DNA or RNA from the individual; and (b) assessing the DNA or RNA for the presence of a haplotype genotype individual. The DNA or RNA for the presence of the haplotype genotype individual. The HFE gene sequences from the present invention can be used to develop products for use in the diagnosis and treatment of HFE. The present protein butyrophilin (FF), and can be used in the production of agonists of and antagonists of BT function. Also described are: (1) a Robet gene which are homologues of the milk products for use in the products for the study, diagnosis and treatment of lugues and Slogren's syndrome; and (2) NFT3 and can be used to develop products for the study, diagnosis and treatment of lugues and Slogren's syndrome; and (2) NFT3 and can be used to develop products for the study, diagnosis and can be used to develop the subject of the study.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bovine butyrophilin; BT; human hereditary haemochromatosis; HFE; diagnosis; iron metabolism; NPT3; NPT4; RoRet; BTF1; BTF2; BTF3; BTF4; BTF5; milk protein; lupus; Sjogren's syndrome; hypophosphatemia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hereditary haemochromatosis gene products - used to develop products for the diagnosis and treatment of hereditary disorders in iron
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 TCTAAGGTTGAGATAAAATTTTTAAATGTATGATTGAATTTTGAAAATCATAAATATTTA 60
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Best Local Similarity 99.5%;
Matches 10779; Conservative
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RESULT 7 AAV57903/C ID AAV57903 standard; DNA; 237326

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| 0y 0b | 181 | CTGCTGTAGGAGAGAGAACTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT | 240 46862 |
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| Qy Db | 241 | TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGCTGACTTCTGGAGCCATCCCCG | 300 46802 |
| Qy Db | 301 | TTTCCCCGCCCCCCAAAAGAAGCGGAGATTTAACGGGGACGTGCGGCCAGAGCTGGGGAA | 360 46742 |
| oy q | 361 | ATGGGCCCGCAGCCAGGCCGCCTTCTCCTCCTGATGCTTTTGCAGACCGCGGTCCTG | 20 |
| 6 % | 42 | 3666C6CTTGCTGCGTGAGTCCGAGGCTGCGGGCGGCGAGGCCGAGGCCGGGCGGG | 480 480 46622 |
| Q _Y | 481 | AATCGAAACTAGCTTTTCTTTGCGCTTGGGAGTTTGCTAACTT | 40 |
| Qy Db | 541 46561 | TCAACCCTATCCGCAAGCCCTCTCCCTACTTTTGGGTCCAGACCCCGTGAGGGAGTGC | 600 46502 |
| QY | 601 | CTACCACTGAACTGCAGATAGGGGTCCCTCGCCCAGGACCTGCCCCTCCCCGGCTGT | 660 46442 |
| Qy Db | 661 | CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT | 720 46382 |
| Qy Db | 721 | TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTGG | 780 46322 |
| Qy Dp | , 781 , 46321 | AACTCGGGTTTATTTCCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG | 840 46262 |
| Qy Db | 841 | AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGCAGGATCCGCACGG | 900 |
| Qy Db | 901 | GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGCGCGAAAGAGTGGCGTTGGGGA | 960 46142 |
| oy Db | 961 | TCTGAATTCTTCACCATTCCACCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT | 1020 46082 |
| Qy Db | 1021 | GGGAGGCTCCTGAGAGAGCCTACCTCGGGCCTTTCCCCACTCTTGGCAATTGTTCTTTT | 1080 46022 |
| Oy Dp | 1081 | GCCTGGAAAATTAAGTATATGTTTAGACGTTTGAACTGAACAACAATTCTTTTCGG | 1140 45962 |
| Oy Dp | 1141 45961 | CTAGGCTTTATTGATTTGCAATGTGCTGTAATTAAGAGGCCTCTCTACAAAGTACTGA | 1200 45902 |
| Qy Dp | 1201 | TAATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATCTGATCTTATTTGA | 1260 45842 |
| ογ | 126 | TTTTCACTAGGCATAGGGGGGGGGGGTAATAATACGTTTATTTTACTAGAGTTAA | 320 |

45003 44943 45362 45063 1440 1740 2040 2100 2400 ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGTGAATTCTAGCCAAGGAGTA TGTAGCACAGTGTTCTGTGGGGTCACACGCCGGCCTCAGCACAGCACTTTGAGTTTTGGTA CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG CAAGGGAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA CGCCGTGGGGGTGGGAAGGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAAAAATGTCTCT AAACTITGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA 2041 1681 45421 1861 1921 45121 2281 44822 2341 1321 45781 1381 1441 1501 1561 45541 1621 1741 1801 45241 1981 2101 2161 2221 45361 45181 45062 45002 44942 44882 45841 45721 45661 45601 45481 45301 QQ pp g g οp δŏ a pp Db g Dp qq pp qq a g qq Qγ g δy g δλ οy ŏ δy ŏ οy Ω δy Qy ΟY Ω δý ŏ QΥ Qγ

| 44703 | 09 | 52 | 44583 | 2580 | 640 | 44463 | 2700 | 2760 | 2820 | 980 | 44223 | 2940 | 3000 | 090 | 44044 | 3120 | 3180 | 3240 | 300 | 43804 | 360 | 37 | 3416 43684 | 47 | 43624 |
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| ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGGTGTTACACAGTCCAGGCAAG | SOONGLEMENS FRANKELINGSONGCECTOOLEGES TO THE STATE OF THE | AGGTAGTGGAGTGGGCTGGGTAGGAAAAGGGAGTGACAAACCATTGTCTCCTGAA | TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAAGAGAATTGG | GGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGAGA | TGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGAGA | GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAATACAAAAATTA | GCTGGGTGTGGTGGACTGTGATCCTAGCTACTCGGGAGGTGAGGTGGAGGTGAGGTA | TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGACCCATGACTGTGCCACTGTACTTCAGC | TAGGTGACAGAGCAAGACCTGTCTCCCCTGACCCTGAAAAAGAGAAGAAGATTAAAG | | TGACTTTGTTCTTTATTTTAATTTTATTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT | TTCTGAGATGGTGAAGGCAGAGGAAAGACCAGTTTGGGGTAAATCAAGGATCTGCATTTG | ACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGT | ACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGT | CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTGTGTAATCCCAGCACT | TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGGTTTGAGACAAGCTTGGCCAACA | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGGGGGGCGCACGCCT | TAGTCCCAGGTTTTCAGGAGGTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAG | | TTGCAGTGAGCTGAGATTGTGCCACTGCAGCCTGGGTGATAGAGTGAGACTCTGT | GCAGTGAGCTGAGATTGTGCCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACT | CTCAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATT | TGGGTCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACT | GGGTCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACC |
| 44762 | 2401 | 246 | 44642 | 2521 | 258 | 44522 | 2641 | 2701 | 2761 | 282 | 44282 | 2881 | 2941 | 00 | 44103 | 3061 | 3121 | 3181 | 324 | 43863 | 3301 | 803 | 3361 | 341 | 43683 |
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| Qy 45 | 4 2 | Oy 46 Db 424 | Qy 47 Db 423 | Oy 47 Db 423 | Qy 48 Db 422 | Qy 49 Db 421 | Oy 49 | Qy 5(| Oy 50 Db 42 | Oy 5: Db 41: | Oy 5 Db 41 | Oy 5 Db 41 | Qy 5 Db 41 | Qy 5 Db 41 | Qy 5 Db 41 | Qy 5 Db 41 | Qy 5 Db 41 | |

41286 41106 40746 41166 41046 40926 6356 6416 6476 6536 9119 6116 6176 6296 5816 5876 AATGATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGAT GCGTAGCTATCACTCACCAATTATGCATTTCTACCCCTGAACATCTGTGGTGTAGGGAA AGGAGAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAAACCCTGAGTTT TCCATTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGT AAATAATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAAAAATCTTCAGAGCACCTA CTATTTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGG ATTGCCCAATGGGGATGGGACCTACGAGGCTGGATAACCTTGGCTGTACCCCCTGGGGA ATTITGTICATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGGAAGT CTCTTAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCA TGGGAAGCATTTTTCTCATTTATATTCTTTGGGGACACCCAGCAGCTCCCTGGGAGACAGA ATTGCCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGA AGAGCAGAGATATACGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGAT CTGGGGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGTTGAGAGGAG TGCCTGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCT 6357 6717 40985 6177 6417 6237 6297 6477 6537 6657 6117 40865 40745 40685 40625 40565 40445 41465 5757 5817 41285 5877 5937 5997 41105 6057 41045 40925 40805 5697 41345 41225 41405 qq qq qq g Qγ q qq g ŏ δ δy Q d δ δ g g δy Dp δ g δ qq δ g δy qq QY $^{\circ}$ g 셤 δ d Qγ ò δ

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39068 38946 39126 39006 38886 38766 9262 8036 38706 38646 38466 38406 7916 8096 8156 8216 8276 8336 8396 8456 8516 8576 38346 38166 8816 ATGAAGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTA 7977 GAAAATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTA CTTACATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCC 8217 TGGCTAACATGGTGAAACCCCATCTCTAATAAAAATACAAAAATTAGCTGGGCGTGGTG 8157 TCCCAGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCC GCAGACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAG GAGGCAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGT AGTATAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTG GGGCTTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTA **ACATGAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAA** AGTCCCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCA TTCATTICITIGGACCCTACGCAAGGACTGTAATTGGTGGGGGACAGCTAGTGGCCCTGCT 7857 8037 8277 8457 8517 8637 38405 38885 38825 8337 8397 38705 38645 8577 38525 38465 8757 8697 8817 38285 8877 38225 Pp QQ Ωÿ q οy $^{\circ}$ g $_{\dot{\Omega}}$ g οy QQ Q Db Dp δ δy a δ δλ QΥ D Ω g Qy Db δ qq δy QQ QY Dp δ qq á q

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SM Barash SC, WPI; 2001-451937/48 CA, Rosen

disorders related to the musculoskeletal system including musculoskeletal cancers and also for testing and detection e.g. or preventing and/ for treating, polypeptide s related to diagnosis

English. Listing; Sequence + SEQ ID NO 3112; 781pp Example 2;

The invention relates to novel genes (AAL34669-AAL37666) and proteins (ABB03087-ABB04109) associated with the musculoskeletal system useful for preventing, treating or ameliorating medical conditions e.g. by protein or gene therapy. The genes are isolated from a range of human tissues disclosed in the specification. The nucleic acids, proteins, antibodies and (antisquists are useful in the diagnosis, treatment of an prevention of: (a) cancer, e.g. breast and ovarian cancer and prevention of: (a) cancer, e.g. breast and ovarian cancer and coher cancers of the adrenal gland, bone, bone marrow, breast, gastrointestinal tract, liver, lung, or urogenital; (b) immune constructions of sissess, allergies, autoimmune haemolytic anaemia, autoimmune thyroiditis, diabetes mellitus, Crohn's disease, multiple sclerosis, rheumatoid arthritis and ulcerative colitis; (c) cardiovascular disorders such as mycoardial ischaemias; (d) wound healing; (e) neurological diseases e.g. cerebral anoxia and epilepsy; and (f) infectious diseases such as viral, bacterial, fungal and Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences. parasitic infections.

BP; 1600 A; 1192 C; 1403 G; 1553 T; 1 other; Sequence 5749

ij 4240 4120 4180 4300 4480 ATGGAAAATCACAACCACAGGGTATGTGGAGGGGGGCCTCACCTTCCTGAGGTTG 4060 GGAAGTACGGGTATGATGGGCAGGACCACCTTGAATTCTGCCCTGACACACTGGATTGGA 4360 AGCTGGGGAGAGGTGTTTTGGACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATA 4540 GAGCAGCAGAACCCAGGGCCTGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGG 4420 tcagagettttcatettttcatgcatettgaaggaaacagetggaagtetgaggtettgt 120 480 420 9 Gaps TCAGAGCTTTTCATCTTTTCATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGT GGGAGCAGGGAAGGGAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGGATGGTG GAAATAGGGACCTATTCCTTTGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCC ACACCTGCAGGTCATCCTGGGCTGTGAAATGCAAGAAGACAACAGTACCGAGGGCTACT gagcagcagaacccagggcctggcccaccaagctggagtgggaaaggcacaagattcggg CCAGGCAGAACAGGGCCTACCTGGAGAGGGACTGCCCTGCACAGCTGCAGCAGTTGCTGG ccaggcagaacagggcctacctggagagggactgccctgcacagctgcaggttgctgg DB 22; Length 5749; Indels 6 52.9%; Score 5724.8; ilarity 99.8%; Pred. No. 0; Conservative 0; Mismatches Query Match Best Local Similarity Matches 5740; Conserv 4001 4181 4061 61 4121 4241 241 4301 4361 4421 4481 181 301 361 421 121 ŏ q ò g g g g g g QQ δ Ω ŏ δý ò οy

4720 TGTATATTTATACCTGTTAAAAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCC 4840 agctgggggagaggtgttttggaccaacaaggtatggtggaaacacattctgccctata TGGCTGAGGCTGTGCCTCTCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTC TACCTTATAATTGAGATGTATGAGACAGCCACAAGTCATGGGGTTTAATTTCTTTTCTCCA agcctgaccaacatggtgaaacccgtctctaaaaaaatacaaaattagctggtcacagt CATGCGCACCTGTAGTCCCAGCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTG tgtatattttatacctgttaaaaattcagaaatgtcaaggccgggcacggtggctcaccct TGTAATCCCAGCACTTTGGGAGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACC AGCCTGACCAACATGGTGAAACCCGTCTCTAAAAAAATACAAAAATTAGCTGGTCACAGT GGAAGCGGAAGTTGCACTGAGCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAG CATATGAATACCAGGACAAAATATCAAGTGAGGCCACTTATCAGAGTAGAAGAATCCTTT AGGTTAAAAAGTTTCTTTCATAGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAG TCCGCTTCTTATAACAATGCCTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCA ATCATTTTCAATGCACATAAAGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACA GATATGTATATTACATGTGAGGAGAACAAGCTGATCTGACTGCTCCCAAGTGACACTG gatatgtatatttacatgtgaggagaacaagctgatctgactgctcccaagtgacactg TGTTAGAGTCCAATCTTAGGACACAAAATGGTGTCTCTCCTGTAGCTTGTTTTTTTCTGA aaagggtatttccttcctccaacctatagaaggaagtgaaagttccagtcttcctgggaa **AAAGGGTATTTCCTTCCTCCAACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAA** GGGTAAACAGATCCCCTCTCTCCTTCCTTTCCTGTCAAGTGCCTCCTTTGGTGA 4601 4661 1081 5141 1141 1260 1320 1560 4721 721 4781 4841 841 4901 4961 5021 1021 5081 5201 1201 5261 5321 5381 1380 1440 5501 1500 5561 601 661 781 901 196 qq qq Ωy òγ Ω QΥ ò Вþ Db 셤 qq g qq QΥ ŏ δy Dp δy Qγ Dp Ω Óγ g Db Qγ g δy δy qq QY g δ qq QY g δý

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| QQ | 3780 | | |
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| Qy Db | 7841 3840 | GTTTTTCTAATTGGCATGAAGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCAT 7900 | |
| Qy Db | 7901 3900 | TTGGGATGCTACTCTAGTATTCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTC 7960 | |
| Qy Db | 7961 3960 | TCCTIGTICTGATAATGAAATTATGATAAGGATGATAAAGCACTTACTT | |
| Qy Dp | 8021 4020 | CTCTTCTGAGCACCTACTTACATGCATTACTGCATGCACTTCTTACAATAATTCTATGAG 8080 | |
| Qy Db | 8081 4080 | TATTATCCCATTTCTTTTAAATGAAGAAGTGAAGTAGGCCGGGCACGG 814 | |
| Qy | 8141 | TGGCTCACGCCTGTAATCCCAGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAG 8200 | |
| Qy Db | 8201 4200 | GAGATCGAGACCATCCTGGCTAACATGGTGAAACCCCATCTCTAATAAAAATACAAAAA 8260 | |
| Qy Db | 8261 4260 | TTAGCTGGGCGTGGCAGACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGA 8320 | |
| Qy Db | 8321 4320 | CCAGGAGGCAGGCTTGCAGTGAGCCGAGTTTGC | |
| Qy Db | 8381 4 380 | GCCTAGGTGACAGAGTGAGACTCCATCTCAAAAAAAAAA | |
| Oy Op | 8441 | AAAAAAAAGTGAAGTATAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTC 8500 | |
| Oy Dp | 8501 4500 | AAACTCAGTCAATCTGACCGTTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGA 8560 | |
| Qy Db | 8561 4560 | GGAGATGGCTCTTCTCTTGTCTCATTGTGTTTCTTC 862 | |
| QY Db | 8621 4620 | TGAGTGAGCTTGAATCACATGAAGGGGAACAGAAAACAACCAAC | |
| QY Db | 8681 4680 | TCATGTTTCCTTTAAAAGTCCCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTT 8740 | |
| QY Dp | 8741 4740 | GACCCTACG | |
| O.Y Db | 4800 | AGCTAGTGGCCTGCTGGGCTTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGT 8860 | |
| δy | 8861 | TCCCTCAATGAAGTGGAGTAAGCTCTCT | |

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                   caccetgcccagccgtcaaaagagtcttaatatatatatccagatggcatgtgtttactt
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                                                                                                                                              CTGGAGTGCAATGGCATGATCTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGAT
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                                                                                                                                                                                                                                                                                                                                            The present invention describes hereditary haemochromatosis gene products from the human haemochromatosis gene. The present sequence represents a hereditary haemochromatosis (HH). Also described is a method to determine the presence or absence of the common hereditary haemochromatosis (HH). Also described is a method to determine the presence or absence of the common hereditary haemochromatosis (HFE) gene mutation in an individual comprising:

Ca providing DNA or RNA from the individual; and (b) assessing the DNA or RNA for the presence or absence of the haplotype genotype indicates the likely presence of the HFE gene mutation in the genome of the individual. The HFE gene sequences from the present invention can be used to develop products for use in the diagnosis and treatment of HFE. The present invention also describes BFF genes, which are homologues of the milk protein butyrophilin (BF), and can be used in the production of agonists and antagonists of BF function. Also described are: (1) a RoRet gene which can be used to develop products for the study, diagnosis and treatment of lupus and Sjogren's syndrome, and (2) NPT3 and NPT4 genes which are homologues of a type I sodium transport gene, and can
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96US-0724394
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Best Local Similarity 99.9%
Matches 10810; Conservative
                                                                                                                                                                                            Kronmal GS, Lahi Z, Wolff RK;
                                                                                                                                                                    (PROG-) PROGENTIOR INC.
                                                                                                                                                                                                                                       WPI; 1998-240014/21.
                                                                                               30-SEP-1997;
              Homo sapiens
                                         WO9814466-A1
                                                                                                                          07-MAY-1997;
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| qq | 45768 | AIGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG | 45709 |
|----|-------------------|---|---------------|
| | 1441 1 | GTAGCACAGTGTTGTGGGTCACACGCCGGCCTCAGCACAGCACTTGAGTTTTGGTA | 1500 |
| | 45708 1 | ACCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACACGCACTTTGAGTTTTG | 45649 |
| | 1501 C | CTACGTGTATCCACATTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG | 1560 45589 |
| | 1561 (45588 (| CAAATTTATTCAATGGTACACTGGGGTTTTGGTGGCAGGGCTCATGTCTCCACTTCATAGC | 1620 45529 |
| | 1621 1 45528 1 | TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG | 1680 45469 |
| | 1681 7 | AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC | 1740 45409 |
| | 1741 C | GGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA | 34 |
| | 1801 C | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA | 1860 45289 |
| | 1861 (45288 (| GAAGCAGAGAGACTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA | 1920 45229 |
| | 1921 A | aataagaatgatgactgggaggagtattcccaggcaactgagggagg | 1980 45169 |
| | 1981 7 45168 7 | TTGGATTAAAAAGCGGGTTTTCTCAGCACTACTCATGTGTGTG | 2040 45109 |
| | 2041 C | CGGCGTGGGGTGGGAAGGGGACTACCATCTGCATGTAGAGATGTCTAGCAGTATCCTGT | 2100 45049 |
| | 2101 (45048 (| CCTCCCTACTCACTAGGGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT | 2160 44989 |
| | 2161 2 | aaactitgccacatgtcacctagtagacaaactcctggttaagaagctcgggttgaaaaa | 2220 44929 |
| | 2221 44928 4 | aataaacaagtagtagtgctggggagtagaggccaagaagtaggtaatgggctcagaagagga | 2280 44869 |
| | 2281 (44868 (| GCCACAAACAAGGTTGTGCAGGGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGGTA | 2340 44809 |
| | 2341 # | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | 2400 44749 |
| | 2401 44748 | aaggaagcaacaataaaagcaggagcccagccaggaagctgttacacagtccaggcaag | 2460 44689 |
| | 2461 44688 4 | AGGTAGTGGAGTGGGCTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA | 2520 44629 |

| 2580 44569 | 2640 | 2700 | 2760 | 2820 | 2880 44269 | 2940 44209 | 3000 44148 | 3060 | 3120 44030 | 3180 43970 | 3240 43910 | 3300 43850 | 3360 43790 | 3420 43730 | 3480 43670 | 3540 43610 | 2 |
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| 1 TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAGAGAAGAATTGG | CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGGCCAAGGAGGAGCAGATTCCTGAGCTCAGGA | GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTTACAAAAATACAAAAATTA | GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA | TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTCAGC | AGGTGACAGAGCAAGACCCTGTCCCCTGAGCCCCTGAAAAGAGAAGAGTTAAAGT | TITGITCITIAITTTAATTITATGCCTGAGCAGIGGGGAATTGGCATGCCAT | CTGAGATGGTGAAGGCAGAGAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG | GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT | GAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT | CAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA | 3TGAAACCCCATGTCTACTAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCCT | SCTTAGGTAGGAGAATCCCTTGAACCCAGGGGGGGGCAGG | GCCTGGGTAAGAGTGAGACTCTGT | Caaaaaaaaaaaaaaaaaaaaaaaaaaaactgaaggaattattcctcaggatttggg | INATTIGCCCIGAGCACCACTCCIGAGTICAACTACCATGGCTAGACACACTTAAC | TTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT | CAGCCACGTGTGGCAGAGAAAGCACA |
| 52 | 9 | 501 | 2701 | 38 | 0 0 | 88 | 2941 | 14 | 90 | 12 | 80 00 | 24 | 30 | 36. | 42 | 3481 | 3541 |
| Qy Db | Qy Db | Qy | Oy Op | Qy Db | QY | QY | Qy | QY | Qy | Qy | Qy | Qy D | Qy Db | Qy | Oy Db | Qy Db | QY |

| å å å | 3601 ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA 1 1 1 1 1 1 1 1 1 | 3660 DD 43490 QY 3720 QY | 42469 | |
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| ପ୍ର | 11111111111111111111111111111111111111 | 43430 DD | 42409 | |
| Oy Dp | 3721 CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGCACTA 11/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1 | 3780 S1 43370 Db | 42349 | |
| QY Dp | 3781 CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA | 3840 QY | 4861 | AGGCCGAGGCGGGTGGTCAC |
| <i>t</i> 2 | 3841 CGT 111 43309 CGT | 00 | 4921 | ACCCGTCTCTAAAAAAATA(|
| Qy Dp | 3901 | 60 | 4981 | GCTAATTGGAAGGCTGAGG |
| 1 % a | 3961 AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATATGGAAAATCACAACCACAG 4111111111111111111111111111111111111 | 4020 OY 43130 | 5041 | GCCAAGAICGCGCCACIGC/ |
| Oy Op | 4021 CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 1111111111111111111111111 | 4080 QY 43070 Db | 5101 | aaaaaaaaaaaaaagk |
| ò | 4081 ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGAAGAGGAAG | 4140 QY | 5161 41989 | ATATCAAGTGAGGCCACTT/ |
| 6 A | | . 0 | 5221 | |
| ç q | | 4260 QY 42890 Db | 5281 | |
| ç q | 4261 | 4320 QY 42830 Db | 5341 | |
| oy B | 4 | 4380 QY 42770 Db | 5401 | AGGAGAACAAGCTGATCTG! |
| <i>8</i> 8 | 4381 TGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGCAGGAACAGGCCTAC 4111111111111111111111111111111111111 | 0y 4440 Db | 5461 | ACACAAAATGGTGTCTCTCC |
| o o | 4441 CTGGAGAGGGACTGCCCTGCACAGCTGCAGCAGTTGCTGGAGCTGGGGGAGAGGGTGTTTTG 41711111111111111111111111111111111111 | 4500 Db | 5521 | AACCTATAGAAGGAAGTGA/ |
| ò á | 4501 GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG | QY 4560 Db | 5581 | CTCATCCTTCCTCTTTCCTC |
| 8 8 8 | 4561 AGGTTGCAGGGCACGGAATCCCTGGTTGAGTTTCAGAGTTGCTGGCTG | 4620 QY 4530 Db | 5641 | TCTTCAGTGACCACTCTACC |
| yo q | 4621 TCCAAATTCTGGGAAGGACTTTCTCAATCCTAGAGTCTCTAACTTGAATTGAAATTGAAATGTA [| 4680 QY | 5701 | AAGTGGCTGAAGGATAAGC! |
| 03. | 4681 TGAGACAGCACAAGTCATGGGTTAAATTTCTTTTCTCCATGTGATGGGTCAAAGGGAA | 4740 { Qy | 5761 | CCCAATGGGGATGGGACCT |

AGAACAAAGAACATGGGTAACAGATATGTATTTACATGTG 41750 4920 5040 5640 CACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAAA 5100 AGAATTCAGAGATCTCAGCTATCATATGAATACCAGGACAAA 5160 CTGAAGCTACCTATACAAGTCCGCTTCTTATAACAATGC 5280 IGAAACIGACCATCTGTATTCAATCATTTTCAATGCACATAA 5340 AGAACAAAGAACATGGGTAACAGATATGTATTTTACATGTG 5400 SACTGCTCTCCAAGTGACACTGTGATAGAGTCCAATCTTAGG 5460 DGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG 5700 CAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG 5760 TACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG 5820 **ITTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA** ACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA SCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA TGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC

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| CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTACCCCCTGGGGAAGAG CAGAGATATACGTACCAGGTGGAGCACCAGGCTGGATCAGCCCCTCATTGTGTTCTGG CAGAGATATACGTACCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGTATCTGG CAGAGATATACGTGCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGTATCTGG CAGAGATATATGGCAGTGAGACTGAGAAAATCTATTGGGGTTGAGAGGTTCTG GGTATGTGACTGATGAGGAGCAGGAGTGAGAAAATCTATTGGGGGTTGAGAGGTTCCC GGTATGTGACTAAATAATGGCAGTGAGATGAGA |
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40070 39890 39590 39830 39770 39650 39470 39410 39170 7620 7740 7140 7200 7260 7320 7380 7440 7500 7560 7680 CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC GCACCTGTCCCAGAAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGTTTTTTAGC AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT **AATGTGTTGTTAAGAAGTTAGATGAGGGGGAGAGACCAGTTAGAAAGCCAATAAGCAT** TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG GTGAATGAGGAAAATAAGGAAGAGAAGAAGAGCCAAGATGGTGCCTAGGTTTGTGATGCCT TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAAAATT GCCTGACGAACTCCTTGATTTTAGCCTTCTCTTTTCATTTCCTCAAAAAGATTTCCCCAT **AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT** 39769 7261 7441 7501 7681 7741 7861 7921 6901 6961 40189 7021 7081 7141 7201 7381 7561 7621 39469 39409 39289 40249 40069 40009 39949 39889 7321 39829 39649 39589 39529 40129 39709 39229 q qq qq Db Q Ωp Db g g qq QQ g QΩ qq QQ qq qq ÓΥ Qγ QΥ QΥ Qγ δ Qγ δ δy g Qγ δy QY ōλ ŏλ QΥ Ω QΥ Ω

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| TATGATAAGGATGATAAAAAGCACTTACTTCGTGCCGACTTCTGAGCACCTACTTA 8 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | CACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGACACCTTGGCGGGGGGGG | 3AGCTTGCAGTGAGCCGAGTTGCGCCACTGCACCTAGGTGACAGGTGAGA 111111111111111111111111111111111111 | SAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG 8: | AAGGAATGGCTCTTCTTGTCTCATTGTTTCTTCTGAGTGAG | IGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCTGTTGCTCTTTGGCATTCA 8 [| CACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC 8 | Tracaccaricceaegrectrecargeaegrecaegrecaegrecaegrecaegrana 3 arteraceargeaegrecaegre |
| 7981 AT 39169 AT 8041 CA: 39109 CA: 8101 TT | 161 989 221 929 929 | 8341 8809 8401 8749 | 461 689 521 629 | 81 G 69 G 41 G 09 G | 701 C 449 C 761 T 189 T | 8821 TT 38329 TT 8881 CC 38269 CC 6941 GC | 38209 G 9001 A 38149 A 9061 A |
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10080 37250 37190 37070 37670 37430 CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT 10200 37490 9840 9240 9300 9360 9420 9480 9540 0996 9720 9780 0096 0066 0966 GACAGGCTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCCCC AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTTGTATTTTAGTAGA GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG TATACTTTAATAAAAGTTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC CITTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT AGGTAAGCATTTGTTTTATATTGGTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT ACAGCTCAGAAGTTTCTTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTTTTTT TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC CATTCTGAAAGCATATGACAAATTATTTCTCTCTTAATATCTTACTATACTGAAAGCAGA CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA TTAAACCATTTTTTTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAAGTAAATGTGATTT 9181 9241 9301 9361 9421 37729 9481 9541 37609 9601 9661 9721 9781 37369 9841 9901 1966 10021 9121 37249 10081 10141 38089 38029 37969 37909 37849 37789 37669 37549 37489 37309 37189 37129 37069 Вþ δλ QQ qq QQ ρp g qq qq qq Op qq qq Dp qq g g q g ŏ QY δy Qγ δy Qγ δ δ δy QΥ Qγ δ δy Qγ QΥ ŏ

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37009 CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGGAACTGTGGCCT 36950
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                   CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGGCGTGCACTGGAA
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                                                              TITITCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG
                                                                                                         CATITITAAATICITATICACCICTGGCAAAACCATICACAAACCATGGTAGTAAAGAGAA
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                                                                                                                                  rising fragment of chemically modified gene, us treatment of diseases associated with abnormal
                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                           Claim 1; SEQ ID NO 2115; 32pp + Sequence Listing; German.
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| Qy Db | 661 5522 | CCCGGCTCTGCGGACTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT 720 |
| Qy Dp | 721 5582 | TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCCTGGGGCTCCTTGAACCTGG 780 |
| Oy Dp | 781 | AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG 840 |
| Qy Dp | 841 5702 | AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCAGCGGGAGATCCGCACGG 900 |
| Oy Dp | 901 | AGAACGAATGCGTTGGGCGGTGGGGCGCGAAAGAGTGGCGTTGG |
| Qy Db | 961 | TCTGAATTCTTCACCATTCCACCCACTTTTGGTGAGACCTGGGGTGGAGGCTCTCTAGGGT 1020 |
| Oy Dp | 1021 | GGGAGGCTCCTGAGAGGCCTACCTCGGGCCTTTCCCCACTCTTGGCAATTGTTCTTTT 1080 |
| 0y 0p | 1081 | CTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTC |
| Oy Db | 1141 | TAAGAGGC taagaggt |
| Oy Dp | 1201 | TAATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATCTGATCTTATTTGA 1260 |
| Qy Dp | 1261 6122 | TTTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACTTTATTTTACTAGAAGTTAACT 1320 |
| Oy Dp | 1321 | CAGG |
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| Oy Dp | 1441 | TGTAGCACAGTGTTCTGTGGGTCACACCGGCCTCAGCACACACA |
| Oy Dp | 1501 6362 | VTTTACACATGACAAGAATGAGGCATGGCACGC |
| Qy | 1561 | AGAGCTCATGTCTCCA agagtttatgttttta |
| Oy Db | 1621 | TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG 1680 |
| ۸, | 1681 | steccagecatgtgttgeactgtteaa |

2100 2700 6781 6961 2160 7021 7081 2280 2340 7201 2400 7261 2460 7321 2520 7381 7501 2760 ttitttatttatttagtgtgttaggagtattttttttggttttgataattaaaaatgttttt ttitttatttatttagtg AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA GTTCAAGACCAGCCTGGGCAACACAGCAAAAACCCCTTCTCTACAAAAAATACAAAAATTA CAAGGGAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGGACATGAAGGA AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG CGGCGTGGGGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCCAGTCTTGACAACCAAAATGTCTCT AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGAATTCTAGCCAAGGAGTA ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCAAGGAAGCTGTTACACAGTCCAGGCAAG AGGTAGTGGAGTGGGCTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA TATATTCTGAAGGAAGTTGCTGAAGGATTCTÄTGTTGTGAGAGAAAGAAGAATTGG CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGGAGCAGATTCCTGAGCACACGA GCTGGCTGTGGTGCCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA TIGCTIGAGCCCAGGAAGTIGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC 1741 6842 6962 7502 7562 6542 1801 6662 1861 6722 1921 6782 1981 2041 6902 2101 7022 2221 7082 2281 7142 2341 7202 2401 7262 2461 7322 2521 7382 2581 7442 2641 2761 7622 2161 2701 g Qγ Db δλ QQ οy QQ δ Db δ QQ Óγ QQ Ω QQ οy QΩ Qγ g δy qq δy OD δy qq òγ Ω Ω QΩ Qγ qq δy QΩ ŏλ QQ Qγ g

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                                       TGACTTTGTTCTTTATTTTAATTTTAATTGCCCTGAGCAGTGGGGTAATTGGCAATGCCAT
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                                                      CCAGACACACAGCTGATGGTATGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCCC
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The invention relates to novel genes (AAL34669-AAL37666) and proteins (ABB03087-ABB04109) associated with the musculoskeletal system useful for preventing, treating or ameliorating medical conditions e.g. by protein or gene therapy. The genes are isolated from a range of human tissues disclosed in the specification. The nucleic acids, proteins, antibodies and (ant)agonists are useful in the diagnosis, treatment and prevention of: (a) cancer, e.g. breast and ovarian cancer and prevention of: (a) cancer, e.g. breast and ovarian cancer and other cancers of the adrenal gland, bone, bone marrow, breast, gastrointestinal tract, liver, lung, or urogenital; (b) immune clisorders e.g. Addison's disease, allergies, autoimmune haemolytic anaemia, autoimmune thyroiditis, diabetes mellitus, Crohn's disease, multiple sclerosis, rheumatoid arthritis and ulcerative collitis; (c) cardiovascular diseases such as myocardial isochemias; (d) wound parasitic infectious diseases such as viral, bacterial, fungal and parasitic infections.

Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at ftp.WIPO at ftp.WIPO.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8039 TACATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCC 8098
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| tttaaa | TTGGG | GGTGA | ggtga | GTAGT(| y cay c TTGCA(| ttgca | CTCAA | ctcaa | ATCTC | ACATC | acato | AGATG | agatg | GAACA gaaca | GGAAG | TGGAC | tggac | CACGG | TGAAG | lilll tgaag | SAGGAT aggat | TAACC | taacc | STCTTI | TCACT | TGGGA |
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| 61 att | 59 CCAG | ენ. | 181 gct | 8279 AGA | | 01 | 66 | 61 | 59 | 13 | 81 | 579 AAC | 541 aag | 639 ATC 601 atc | 699 TCC | 9 6 | 21 | 19 | 79 | 841 tc | 939 TG 901 tg | 999 AA | 961 aa | 059 CA 021 ca | 119 AT | 9179 CA |
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/note= "if this base is mutated to G, then the
protein contains the mutation H63D"
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protein contains the mutation S65C"
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                                                                                                                                                                                                                                      Diagnosing an iron disorder e.g. hemochromatosis or a genetic susceptibility to develop it, by determining the presence of a mutation in exon 2 or an intron of a histocompatibility iron loading nucleic acid -
                      "if this base is mutated to C, then the protein contains the mutation I105T, which is associated with an iron overload disorder"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCCTATTTTTGGAAGAGGACTCCTTAAATTTGGGGGACTTACATGATTCATTTAACATC 7523
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9.7%; Score 1051.6; DB 21; Lengt
98.7%; Pred. No. 1.8e-175;
.ive 0; Mismatches 14; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 2506 BP; 648 A; 552 C; 596 G; 710 T; 0 other;
                                                                                                                                                                                    Barton JC;
                                                                                                                                                                                                                                                                                             Disclosure; Page 2-3; 55pp; English.
                                                                                                                                                                                 Rothenberg BE, Sawada-Hirai R,
                                                                                                               24-MAR-2000; 2000WO-US07982
                                                                                                                                     99US-0277457
                                                                                                                                                           (BILL-) BILLUPS-ROTHENBERG
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Matches 1060; Conservative
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P-PSDB; AAB19149.
                                                                  WO200058515-A1
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                                                                                                                               CAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTCCATCTGATTGTGATGTGAGTTGC
                                  TGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCATAACCTTACCAGATTTTTACACAT
                                                                               ACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAGGCACCTGTCCCAGAAAAAGCATC
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(COUN-) COUNCIL QUEENSLAND INST MEDICAL RES
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23-AUG-1996;
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1765

Db

7644

CAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTCCATCTGATTGTGATGTTGC

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This sequence represents the haemochromatosis (HC) gene. Mutations in this sequence are detected using the method of the invention. The method is for identifying an individual with hereditary haemochromatosis (HH) or a predisposition to develop HH or to genetically pass on HH to an offerpring, comprising isolating a biological sample and amplifying a region of genomic DNA in the biological sample encompassing all or part of the DNA between markers D65256 and D65276, and detecting at least one homozygous or heterozygous mutation in a nucleotide within the region. The method can also be used for identifying an individual with an autosomal recessive disorder (ARD) or predisposition to develop and/or genetically pass on an ARD to an offspring, comprises isolating a biological sample from the individual and screening genomic DNA in the sample for the presence of a homozygous or heterozygous mutation in a comparation from the individual and screening genomic DNA in the sample for the method(s) can be used to identify individuals that are homozygous or heterozygous (carriers) for the mutation cousing the ARD. Especially the method is used to diagnose HH or predisposition to the HB by detecting a Cys2827yr substitution. Individuals homozygous for this
                                                                                                                     Detection of autosomal recessive disorder - particularly hereditary haemochromatosis, by detecting a mutation in the HC gene
                    Powell LW;
                    EC,
                       Jazwinska
                                                                                                                                                                                              Disclosure; Page -; 32pp; English
                          Ĕ
                    Cullen
                                                                      WPI; 1998-179064/16.
                    Busfield F,
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Sequence 2727 BP; 702 A; 606 C; 660 G; 759 T; 0 other;

ô 7463 GCCTTCTCTGTTCATTTCCTCAAAAAGATTTCCCCATTTAGGTTTCTGAGTTCCTGCATG 7343 1405 gccttctctgttcatttcctcaaaaagatttccccatttaggtttctgagttcctgcatg 1464 7523 tectatttttggaaggaeteettaaatttgggggaettaeatgatteattttaaeate 1644 7583 7224 ATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATTGCCTGACGAACTCCTTGATTTA 7283 CCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTGTCTCTCATGAACCTCAAGCTGCA 7403 Gaps TCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAGACATACACCTATGTCATTTCATT TCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGGACTTACATGATTCATTTTAACATC TGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCATAACCTTACCAGATTTTTACACAT DB 19; Length 2727; . 0 14; Indels Score 1051.6; DB 1 Pred. No. 1.9e-175; 0; Mismatches 14; 9.7%; Conservative Similarity Query Match Best Local Simil Matches 1060; 1525 1585 7524 7404 7464 7104 7344 qq Qy Dp g à g δŻ a δ 9 à g õ g δy Ω

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7584 GTATCTATGCATTTTCTGGACCCGTTCAACTTTTTCTTTGAATCCTCTCTGTGTTACC

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Wolff
          2065 attttctacctggtctctccttgttctgaaatgaaaattatgataaggatgataaagc
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                                                                                                                                7944 ATTTTCTACCTGGTCTCCTTGTTCTGATAATGAAATTATGATAAGGATGATAAAAGC
                                                                                                                                                                                                                       TACAATAATTCTATGAGATAGGTACTATTATCCCCCATTTCTTTTTAAATGAAGAAGTG
ACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAGGCACCTGTCCCAGAAAAAGCATC
                                      ATGGCTATCTGTGGGTAGTATGATGGGTGTTTTTAGCAGGTAGGAGGCAAATATCTTGAA
                                                                              AGGGGTTGTGAAGAGGTGTTTTTTTTTTTGGCATGAAGGTGTCATACAGATTTGCAAAG
                                                                                                                                                                                                  DNA used for mutation detection.
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                                                                                                                                                                                                                                                                                                                                                                                                                 Human hereditary hemochromatosis
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96US-0652265.
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16-APR-1996;
23-MAY-1996;
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                                 The present invention relates to hereditary hemochromatosis gene products. These proteins may be used to treat a patient diagnosed as having human hemochromatosis disease. It is also useful as a metal chelation agent or as a T-cell differentiation factor, and for alleviating iron overload. They may also be used in protein replacement therapy for individuals having a defective human hemochromatosis gene.
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                                                                                                                             Sequence 517 BP; 126 A; 120 C; 147 G; 124 T; 0 other;
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Pred. No. 1.5e-81;
0; Mismatches 1;
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Job time: 12448 sec
           Disclosure; Fig 6; 108pp; English.
                                                                                                                                                                  Query Match
Best Local Similarity 99.8%;
Matches 516; Conservative
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Local Similarity 98.8%;
nes 418; Conservative
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1 (bases 1 to 457)

NCI/NINDS-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.

National Cancer Institute / National Institute of Neurological Disorders and Stroke, Brain Tumor Genome Anatomy Project
                                                                                                                                                                                                                                                                                                                                              repetitive element ;, mRNA sequence. AI160732
Bonaldo, Ph.D
cDNA Library
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Unpublished (1998)
                                                                                                                                                                                                                                                                      Homo sapiens
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                                                                                                         Contact: Robert Strausberg, Ph.D.
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                                 cDNA Library Preparation: M. Bento Soares,
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                                                                                      cgapbs-r@mail.nih.gov
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0; Mismatches 4
by:
Greg
                                                                     N. Louis,
Lennon,
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416; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA Sequencing by: Washington University Genome Sequencing Center Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: www-bio.llnl.gov/bbrp/image/image.html
Insert Length: 876 Std Error: 0.00
Seq.primer: -40ml3 fwd. ET from Amersham
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/clone_lib="NCI_CGAP_Brn23"
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420;
                                                                                                                                                                                                                                                                                                                                                                                   Contact: Mark Adams
Department of Eukaryotic Genomics
The Institute for Genomic Research
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CIT-HSP-2370L14.TR CIT-HSP Homo
                                                                                                                                                                                                                                                                    http://www.tigr.org/tdb/humgen/bac_end_search/bac_end_search.html
Seq primer: M13 Reverse
Class: BAC ends.
                                                                                                                                                                                                                                                                                                                    Email: mdadams@tigr.org
Clones are available from Research Genetics (info@resgen.com).
                                                                                                                                                                                                                                                                                                                                                                                                                              Unpublished (1998)
Other_GSSs: CIT-HSP-2370L14.TF
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Adams, M.D., Rounsley, S.D.,
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301 838 0200
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m 127
                                                                                                                                                                                     /clone="2370L14"
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/note="Vector: pBeloBAC11; Site_1:
                                                                                                                                                                         /sex="Male"
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                                                                                                                                                                                                                                                                     cDNA Library Preparation: M. Bento Soares, Ph.D. CDNA Library Arrayed by: Greg Lennon, Ph.D. DNA Sequencing by: Washington University Genome Clone distribution: NCI-CGAP clone distribution found through the I.M.A.G.E. Consortium/LLNL at:
                                                                                                                                                                                                                                                                                                                                                        Unpublished (1997)
Contact: Robert Strausberg, Ph.D.
Email: cgapbs-remail.nih.gov
Tissue Procurement: Christopher Moskaluk, M.D.,
Emmert-Buck, M.D., Ph.D.
                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
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National Cancer Institute, Cancer Genome Ana
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quality sequence stop: 428.
/note="Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; 1st strand cDNA was prepared from pooled breast tumor tissue, and was then primed with a Not I
                                             /sex="female, pooled"
/tissue_type="breast"
/lab_host="DH10B"
                                                                                  /clone="IMAGE:1071428"
/clone_lib="NCI_CGAP_Br2"
/sex="female, pooled"
                                                                                                                                       /db_xref="taxon:9606"
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CTGTAATCCCAGCACTAAGGGAGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTGTGAG
                                     CTGTAATCCCAGCACTTTGGTGGCCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAG 3164
                                                                                                                                                                                                                                                                                                                                        GCCACTGTATTCAAGCCTAGGTGACAGAGCNAGACCCTGTCTCCCCTGACCCCCTGAAAA 354
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                                                                                                                  GGCCACATAGGCAGTTCAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTT 310
                                                                                                                                                         CAAGGATCTGCATTT-GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGA 175
                                                                                                                                                                                                                                      AGAGAAGAGTTAAAGTTGACTTTGTTCTTTATTTTAATTTAATTGGCCTGAGCAGTGGGG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Email: jwallace@u.washington.edu
Email: jwallace@u.washington.edu
Clones may be purchased from Research Genetics (info@resgen.com).
BAC end Web Server: http://www.htsc.washington.edu
Plate: 2239 row: H column: 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 High Throughput Sequencing Center University of Washington 401 Queen Anne Avenue North, Seattle, WA 98109, Tel: (206) 616-3618
Fax: (206) 616-3887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 533)

Mahairas,G.G., Wallace,J.C., Smith,K., Swartzell,S., Holzman,T.,

Mahairas,G.G., Wallace,J.C., Smith,K., Swartzell,S., Holzman,T.,

Mahairas,G.G., Wallace,J.C., Smith,K., Swartzell,S., Holzman,T.,

Mahairas,G.G., Wallace,J.C., Smith,K., Swartzell,S., Holzman,T.,
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    Location/Qualifiers
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Class: BAC ends
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E-Coli DH10B"
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/db_xref="taxon:9606"
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91.6%;
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Primates;
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Pred. No. 2.2e-48;
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Tissue Procurement: Chris
Emmert-Buck, M.D., Ph.D.
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Unpublished (1997)
Contact: Robert Strausberg, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Verte
Mammalia; Eutheria; Primates; Catarrhini; Hon
1 (bases 1 to 525)
NCI-GGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anat
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Seq primer: -40UP from Gibco
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similar to
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Location/Qualifiers
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                                                                                                                                                                                                                                                                                                                                                                                                    /note="Organ: kidney; Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; Site_1: Not I; Site_2: Eco RI; Plasmid DNA from the normalized library NCI_CGAP_Kid3 was prepared, and ss circles were made in vitro. Following HAP purification, this DNA was used as tracer in a subtractive hybridization reaction. The driver was PCR-amplified cDNAs from a pool of 5,000 clones made from the same library (cloneIDs 132376-1323911, 1456007-1456775, and 1500552-1502855). "Subtraction by Bento Soares and M. Fatima Bonaldo."
                                                                                                                                                                                                                                                                                                                                                                             Fatima Bonaldo. "
123 c 125 g
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99.1%;
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Pred. No. 2.9
                                                                                                                                                                                                                                                           Mismatches
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Mammalla; Butheria; Primates; Catarrhini; Hom
1 (bases 1 to 442)
NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anat
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UI-H-BI3-akv-c-07-0-UI.sl NCI_CGAP_Sub5
IMAGE:2735605 3', mRNA sequence.
AW44998
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www-bio.llnl.gov/bbrp/image/image.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Contact: Robert Strausberg, Ph.D. Email: cgapbs-r@mail.nih.gov
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Seq primer: M13 POLYA=Yes.
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/Organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="TMAGE:2735605"
/clone="IMAGE:2735605"
/clone="IMAGE:2735605"
/clone="TMAGE:2735605"
/lab_host="DHIOB (Life Technologies)"
/lab_ho
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                                                                                         AQ790990 533 bp DNA linear GSS 03-AU HS_2239_B1_D04_MR CIT Approved Human Genomic Sperm Library D sapiens genomic clone Plate=2239 Col=7 Row=H, DNA sequence.
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385 CTTCTCCTCCTGATGCTTTTGCAGACCGCGGTCCTGCAGGGGCGCTTGCTGCGTGAGTCC 444
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CCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGCCTACCACTGAACTGCAGATAGGGG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (IMAGE CloneIDs 1323912-1325831, 1471368-1472903, 1492104-1493255); NCI_CGAP_Lu5 pool 1 LLAM 3575-3582, 3851-3854 (IMAGE CloneIDs 1414920-1417991,1520904-1522439); NCI_CGAP_CC4 pool 1 LLAM 3164-3167, 3716-3720, 3733-3735 (IMAGE CloneIDs 1257096-125831,1469064-1470983, 1475592-1476743); NCI_CGAP_PT22 pool 1 LLAM 2457-2459, 2758-2759, 3062-3068 (IMAGE CloneIDs 985608-986759, 1101192-1101959, 1217928-1220615); NCI_CGAP_CO10 pool 1 LLAM 2644-2653, 2871-2872 (IMAGE CloneIDs 1057416-1061255, 1101192-1101595), 1217928-1220615); NCI_CGAP_Sub1 (IMAGE CloneIDs 27044-2653, 2871-2872 (IMAGE CloneIDs 1057416-1061255, 1144-884-1145351), (10% of the driver population), plus a pool of 3,840 arrayed clones from NCI_CGAP_Sub2 (IMAGE CloneIDs 2708616-2710535) and NCI_CGAP_Sub2 (IMAGE CloneIDs 2708616-2710535) and NCI_CGAP_Sub3 (IMAGE CloneIDs 2708616-2710535) and NCI_CGAP_Sub3 (IMAGE CloneIDs 2712456-2723591) (10% of the driver population), plus a pool of 11,136 clones from NCI_CGAP_Sub3 (IMAGE CloneIDs 2712456-2723591) (10% of the driver population), plus a pool of 5,472 clones from NCI_CGAP_Sub3 (IMAGE CloneIDs 2712456-2723591) (10% of the driver population), Subtraction was performed as previously described (Bonaldo, Lennon & Soares (1996); Normalization and Subtraction: Two Approaches To Facilitate Gene Discovery. Genome Research 6, 791-806.
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TAG_TISSUE=colon
TAG_SEQ=AAACG"
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                                                                                                                                                                                 TCTTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAAAGTAAATGTGATTTACGCTCATTGT 9611
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                                                                                                                                                           TCTTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAGTAAATGTGATTTACGCTCATTGT
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
1_(bases 1 to 520)
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Unpublished (1997)
Contact: Robert Strausberg, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cDNA Library Preparation: M. Bento Soares, Ph.D. cONA Library Arrayed by: Greg Lennon, Ph.D. DNA Sequencing by: Washington University Genome Sequencing Center Clone distribution: NCI-CGAP clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at:
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Emmert-Buck, M.D., Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                National Cancer Institute, Cancer
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Seg primer: -40UP from Gibco
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84 c 82 g
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/clone_lib="NCI_CGAP_Kid12"
/tissue_type="2 pooled tumox
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Fax: 314 286 1810
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4444 Forest Park Parkway,
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similar to
                                                                                    Contact: Robert Strausberg, Ph.D.
Email: cgapbs-r@mail.nih.gov
Tissue Procurement: Ilan Kirsch, M.D.,
                                                                                                                                                                                               Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 439)

NCI-GGAP http://www.ncbi.nlm.nih.gov/ncicgap.

National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
                                                                                                                                                                                                                                                                                                                                                                                                   sequence.
                                                                                                                                                       Unpublished (1997)
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cDNA Library Preparation: M. Bento Soares, Ph.D. cDNA Library Arrayed by: Greg Lennon, Ph.D. DNA Sequencing by: Washington University Genome
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CONtains element MER36 repetitive element; mRNA
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wq04f05.xl NCI_CGAP_Kid12 H
mRNA sequence.
AI949947
AI949947 GI:5742257
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Insert Length: 865 Std Error: 0.00 Seq primer: -40ml3 fwd. ET from Amersham High quality sequence stop: 421.
Location/Qualifiers
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/db_xref="taxon:9606"
/clone="IMAGE:1161797"
/clone_Lib="NCI_CGAP_Col0"
/tissue_type="colon tumor RER+"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="Organ: colon; Vector: pT7T3D-Pac (Pharmacia) with a
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Pred. No. 2.3e-50;
0; Mismatches 5
                                                                                    Homo
                                                                                    sapiens cDNA clone
                                                                                                     mRNA
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IMAGE:2470305 3',
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 al Similarity
432; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AI127651 438 bp mRNA linear EST 27-OC: qc30h07.x1 Soares_pregnant_uterus_NbHPU Homo sapiens cDNA clor LMAGE:1711165_3' similar to contains element MER36 repetitive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        element ;, mRNA sequence.
AI127651
                                                                                                                                                                                                                                                                                                        Email: cgapbs-r@mail.nih.gov
This clone is available royalty-free through LLNL; contact the
IMAGE Consortium (info@image.llnl.gov) for further information.
Insert Length: 669 Std Error: 0.00
Seq primer: -40ml3 fwd. ET from Amersham
High quality sequence stop: 415.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EST
                                                                                                                                                                                                                                                                                                                                                                                                   Contact: Robert Strausberg, Ph.D
                                                                                                                                                                                                                                                                                                                                                                                                                Unpublished (1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                        NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.
National Cancer Institute, Cancer Genome Anatomy Project (CGAP),
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                                                                        /note="Organ: uterus; Vector: pT7T3-Pac;
Site_2: Eco RI; 1st strand cDNA was prime
oligo(dT) primer [5'
                                                                                                                                                                                                                             /organism="Homo sapiens"
/db_xref="taxon:9606"
/clone="IMAGE:1711165"
/clone_lib="Soares_pregnant_uterus_NbHPU"
/sex="female"
                                                                                                                                                                                                                                                                                                1. .438
                                                                                                                                                                                                                    /dev_stage="adult"
                                                                                                                                                                                                      /lab_host-"DH10B"
            4.08;
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Score 429.6; DB Pred. No. 1e-50; Mismatches
                        9;
                        Length
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Unpublished (1997)
Contact: Robert Strausberg, Ph.D.
Email: cgapbs-remail.nih.gov
Tissue Procurement: Christopher Moskaluk, M.D., Ph.D.
CDNA Library Preparation: M. Bento Soares, Ph.D.
CDNA Library Preparation: M. Bento Soares, Ph.D.
CDNA Sequencing by: Washington University Genome Seq
Clone distribution: NCI-CGAP clone distribution inf
found through the I.M.A.G.B. Consortium/LLNL at:
www-bio.lni.gov/bbrp/image/image.html
Seq primer: -40UP from Giboo
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCI-CGAP http://www.ncbi.nlm.nih.gov/ncicgap.National Cancer Institute, Cancer Genome Anat
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                                                                                                                                                                                                                                                                                  quality sequence stop: 439.
Location/Qualifiers
/db_xref="taxon:9606"
/Clone="InMcE:2874990"
/Clone_lib="NCI_CGAP_Kidl2"
/clone_lib="NCI_CGAP_Kidl2"
/tissue_type="2 pooled tumors (clear cell type)"
/lab_host="DHJOB"
/note="Organ: kidney; Vector: pT7T3D-Pac (Pharmacia) with a modified polylinker; Site_1: Not 1; Site_2: Eco RI; Plasmid DNA from the normalized library NCI_CGAP_Kid5 was
                                                                                                                                                                                                                                 /organism="Homo sapiens"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Christopher Moskaluk, M.D., Ph.D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Anatomy Project (CGAP),
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                              GTTCAAAAGAGTCTTTTTTTTTTTTTTTGAGACTCTA 9091
                                                                                                                                         AAGTGGCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTA 8995
                                                                                                                                                                                                     ATTTCCCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAAATGGAAGCCACC 8935
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                                                            AAAAAAAAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCAT 65
                                                                                         AAAAAAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCAT 9055
                                                                                                                          AAGTGGCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGGTTCCGGTGCACATTA 125
                                                                                                                                                                                       ATTTCCCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACC
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Unpublished (2000)
Contact: John Quackenbush
The Institute for Genomic Research
The Institute for Genomic Rockville,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 (bases 1 to 545)
Hegde, P., Qi, R., Abernathy, K.,
I.E., Saeed, A.I., Sharov, V.,
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Tel: 301 838 3528
Fax: 301 838 0208
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Assessment of gene expression patterns in a model
metastasis using a 19,200 element cDNA microarray
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84; Conservative
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/note="Vector: pBluescriptSKm"
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/db_xref="taxon:9606"
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Pred. No. 1.1e-55;
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                                                                                                  CAGCAGTTGCTGGAGCTGGGGAGAGGTGTTTTGGACCAACAAGGTATGGTGGAAACACAC
                                                                                                                                                                                  CACAAGATTCGGGCCAGGCAGAACAGGGCCTACCTGGAGAGGGACTGCCCTGCACAGCTG
                                                                                                                                                                                                                                            TTCTGCCCCTATACTCTANTGGCAGAGTGGAGGGTTGCAGGGCACGGAATCCCTGGTT
                    TTCTGCCCCTATACTCTAGTGGCAGAGTGGAGGAGGTTGCAGGGCACGGAATCCCTGGTT
                                                                                                                                                              CTCTTGATTCGGGCCAGGCAGAACAGGGCCTACCTGGAGAGGGACTGCCCTGCACAGCTG
                                                                           CAGCAGTTGCTGGAGCTGGGGAGAAGGTGTTTGGACCAACAAGGTATGGTGGAAACACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              401 Queen Anne Avenue North, Seattle, WA 98109, USA
Tel: (206) 616-3618
Fax: (206) 616-3887
Email: jwallace@u.washington.edu
Clones are derived from the human BAC library RPCI-11. For BAC
Library availability, please contact Pieter de Jong
(pieter@dejong.med.buffalo.edu). Clones may be purchased from
BACPAC Resources (http://bacpac.med.buffalo.edu/ordering_bac.htm)
or from Resear h Genetics (info@resgen.com). BAC end Web Server:
http://www.htsc.washington.edu
plate: 1019 row: N column: 17
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Location/Qualifiers
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University of Washington
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Keller, A., Shaker, R., Furlong, J.,
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Similarity 96.5%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note="Vector: pBACe3.6; Site_1: BcoRI; Site_2: EcoRI; Male blood DNA was isolated from one randomly chosen do and partially digested with a combination of EcoRI and EcoRI Methylase. Size selected DNA was cloned into the pBACe3.6 vector at EcoRI sites"

a 114 c 146 g 137 t 5 others
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Homo sapiens"
/db_xref="taxon:9606"
/dlone="platc=1019 Col=17 Row=N"
/clone_lib="RPCI-11 Human Male BAC Library"
/sex="male"
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Pred. No. 1.3e-55;
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Young,J., Zhao,S.,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGAGATGACAATAAGCAAA
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                                                                                                                                                                                                                                                                                                                                               GTTTTCTCAGCACTACTCATGTGT 2020
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGCTATGATTCTTAAACAT 1636
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617; Conser
                                                                                                                                                                    AG116246
AG116246
Pan troglodytes DNA, clone: PTB-123L15.R, genomic su AG116246
AG116246.1 GI:16736765
GSS; GSS (genome survey sequence).
Pan troglodytes male lymphoblast DNA, clone_lib:PTB
BAC Library clone:PTB-123L15.R.
  Direct Submission Submitted (02-AUG
                        2 (bases 1 to 648)
Fujiyama,A., Hattori,M., Toyoda,A.,
Totoki,Y., Watanabe,H. and Sakaki,Y.
                                                                 Unpublished
                                                                            Totoki,Y., Watanabe,H. and Sakaki,Y. BAC end sequences of Library PTB
                                                                                                      Fujiyama,A.,
                                                                                                                              Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
                                                                                                                                                            Pan
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                                                                                                                                                          troglodytes
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(02-AUG-2001) Asao Fujiyama,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5.7%;
98.9%;
                                                                                                      Hattori, M., Toyoda, A.,
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1.9e-76;
7;
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 Institute of Physical
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGCAATTGTTCTTTTGCCTGGAAAATTAAGTATATGTTAGTTTTTGAACGTTTTGAACTGAA 1125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGAGGTCTCTAGGGTGGGAGGCTCCTGAGAGAGGCCTACCTCGGGCCTTTCCCCACTCTT 589
CGCCCTGCTTGCCAAATTTATTCAATGGTACACTGGGCTTTGGTAGCAGAGCTC
                                                                                                  CTTTGAGTTTTGGTACTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCA 1545
                                                                                                                                                                                     GATTTIGCCCTGTAGTGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACAGCA 1485
                                                                                                                                                                                                                                                                                                                                                                                                                              TCTGATCTTATTTGATTTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTT 1305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGCAATTGTTCTTTTGCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAA
                                     CGGCCTGCTTCCTGGCAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTC 1602
                                                                              CTTTGAGTTTTGGTACTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCA
                                                                                                                                                               GATTTTGCCCTGTAGTGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACAGCA 169
                                                                                                                                                                                                                                             TAATCTGGTTTTCTGATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGT 229
                                                                                                                                                                                                                                                                                TAATCTGGTTTTCTGATGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and Chemical Research (RIKEN), Genomic Sciences Center (GSC); 1-7-22 Suehiro-chou, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan (E-mail:chimpbes/gsc.riken.go.jp/, URL:http://hgp.gsc.riken.go.jp/, Tel:81-45-503-9111, Pax:81-45-503-9170)
Clones are derived from the chimpanzee BAC library PTB This BAC enwas generated during the R&D process and may have higher chance of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                clone tracking errors.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /cell_type="lymphoblast"
/clone_lib="PTB Chimpanzee Male
/clone_lib="PTB Chimpanzee Male
148 c 125 g 163 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Pan troglodytes"
/db_xref="taxon:9598"
/clone="PTB-123L15.R"
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Pred. No. 4.2e-73;
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AW974162

545 bp

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Title:
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Sequence:
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Listing first 45 summaries
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  Score
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Match
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13736207 seqs, 6748477542 residues
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Gapop 10.0 , Gapext 1.0
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10825
1 TCTAAGGTTGAGATAAAATT.....TCCCCAAATTTTTCATAAAC 10825
                   gb_estl:*
gb_est2:*
gb_htc:*
gb_htc:*
gb_ss:*
em_gss_hum:*
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Copyright (c) 1993 - 2000 Compugen Ltd.
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10 BG92654

12 MG116246

9 MW974162

12 AQ703007

9 A1127651

9 A4169921

9 A49993736

10 W93736

9 AW449998

10 W93736

9 AW299376

12 AQ710090

9 AW299376

12 AQ111002

9 A1569989

9 A1569899

9 A1569894

10 BG402460
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BG926549 HNC42-1-G
AG116246 Pan trog1
AW974162 EST386265
AQ703007 HS_5443_B
A1127651 G250h07 x
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AA876054 nr14403 .s
AA876054 rr14403 .s
A194994 W194105 x
N93716 ZD51906.5 x
AQ111002 CIT-HSD-2
AA569989 nm47911 s
AI126973 QB49D10 .x
AI126974 G81301 .s
                                                                                                                                                             Description
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| 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 |
|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|----------|--------------------|----------|-------------------|--------------------|--------------------|----------|-------------------|----------|--------------------|--------------------|----------|--------------|--------------------|
| 270.6 | 271 | 271 | 271.8 | 271.8 | 272.2 | 272.2 | 275.8 | 277.4 | 278 | 278 | 280.2 | 283 | 285.2 | 293 | 313.4 | 316.4 | 317.2 | 324.2 | 341.2 | 342.2 | 350.6 | 354 | 360.2 | 362 | ~ | 369.8 | - 1 |
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| 444 | 817 | 759 | 658 | 339 | 456 | 384 | 299 | 6146 | 650 | 612 | 822 | 308 | 292 | 420 | 326 | 318 | 445 | 334 | 368 | 388 | 441 | 540 | 448 | 393 | 454 | 385 | 380 |
| 12 | 9 | 12 | 12 | 9 | 12 | 9 | 10 | 12 | 12 | 12 | 10 | 9 | 10 | 12 | 12 | 10 | 10 | 9 | 10 | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 9 |
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| B89781 CIT-HSP-217 | AL562711 AL562711 | AG185133 Pan trogl | AG183592 Pan trogl | AA102329 z190g03.r | AQ483293 RPCI-11-2 | AI079088 oy51g10.s | R07647 ye98g01.s1 | AQ839831 260L13-C4 | AG116352 Pan trogl | AQ395455 CITBI-E1- | BG249643 602319736 | AA319758 EST22021 | BF405650 UI-R-CA1- | HS_3005_ | AQ056874 CIT-HSP-2 | 7p32a03. | H01502 yj21c03.s1 | AW902003 QV0-NN102 | BF739151 CM4-KT003 | 7p38b08. | R76697 y161f07.s1 | 느 | AI369750 qy72e06.x | A1763178 w165f02.x | ly24g03. | 080 wh62a10. | AI040303 oy09c09.x |

ALIGNMENTS

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| BASE COUNT ORIGIN | FEATURES Source | AUTHORS TITLE TOURNAL MEDLINE COMMENT | BG926549/C LOCUS DEFINITION ACCESSION VERSION KEYWORDS SOURCE ORGANISM REFERENCE | RESULT 1 |
|---|--|---------------------------------------|---|----------|
| /organism="Homo Sapiens" /db_xref="taxon:9606" /clone_lib="HNC (Human Normal Cartilage)" /tissue_type="cartilage" /lab_host="E.coli DH10 B" /note="Vector: pSPORT I; Site_1: SalI; Site_2: NotI; Directional" 182 a 179 c 137 g 193 t | GlaxoSmithKline 709 Swedeland Road, P.O. Box 1539, King of Prussia, PA 19406, USA Tel: 610-270-7245 Fax: 610-270-5598 Email: sanjay_kumar-1@gsk.com Seq primer: T7. Location/Qualifiers 1. 691 | ע אא מי | BG926549 BG926549 BG926549 BG926549 BG926549 BG926549.1 GI:14321072 EST. HOMO Sapiens LORD HOMO Sapiens EURA HOMO HOMO HOMO HOMO HOMO HOMO HOMO HOM | |

us-09-497-957-1.rni

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NAME/KEY: CDS
LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881,
LOCATION: 6040..6153, 7107..7147)
OTHER INFORMATION: /product= "Hereditary Hemochromatosis
OTHER INFORMATION:
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MOLECULE TYPE: DNA (genomic)
FEATURE:
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TYPE: nucleic acid
STRANDEDNESS: single
TOPOLOGY: linear
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2: /cgn2_6/ptodata/2/ina/5B_COMB.seq:*
3: /cgn2_6/ptodata/2/ina/6A_COMB.seq:*
4: /cgn2_6/ptodata/2/ina/6B_COMB.seq:*
5: /cgn2_6/ptodata/2/ina/ptcTUS_COMB.seq:*
6: /cgn2_6/ptodata/2/ina/ptcTUS_COMB.seq:*
GenCore version 4.5
Copyright (c) 1993 - 2000 Compugen Ltd.
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US-08-632-673B-1

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Maximum Match 100%
Listing first 45 summaries
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| Sequence 35, Appl Sequence 10, Appl Sequence 3, Appl Sequence 3, Appl Sequence 10, Appl Sequence 11, A | | |
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| 9 355.8 3.3 14796 4 US-08-975-080-35 9 355.8 3.3 14796 4 US-09-630-706-10 1 329.8 3.0 14796 4 US-09-66-694B-3- 2 320.8 3.0 15977 4 US-09-608-285A-59 3 320.8 3.0 7210 2 US-08-257-963B-10 5 320.8 3.0 7210 2 US-08-37-963B-10 5 320.8 3.0 7210 5 PCT-US95-07201-10 6 320.8 3.0 22481 4 US-08-37-841A-43 2 320.8 3.0 22481 4 US-08-257-963B-10 9 320.2 3.0 7210 2 US-08-257-963B-10 9 320.2 3.0 7210 2 US-08-257-963B-10 1 320.2 3.0 7210 4 US-08-367-841A-43 2 320.2 3.0 7210 4 US-08-257-963B-10 1 320.2 3.0 7210 4 US-08-257-963B-10 3 320.2 3.0 7210 4 US-08-552-265-9 3 320.3 3.0 1440 3 US-08-652-265-11 | RESULT 1 Sequence 1, Application US/08652265 Sequence 1, Application US/08652265 Patent No. 6025130 GENERAL INFORMATION: APPLICANT: Thomas, Winston J. APPLICANT: Thomas, Winston J. APPLICANT: Ruddy, David APPLICANT: Ruddy, Mareai APPLICANT: Ruddy, David APPLICANT: Tauchinashi, Zenta APPLICANT: Tauchinashi, Zenta APPLICANT: Tauchinashi, Zenta APPLICANT: Tauchinashi, Zenta APPLICANT: San Francisco CORRESPONDENCE ADDERSS: 4 CORRESPONDENCE ADDERSS: 4 CORRESPONDENCE ADDERSS: Floppy disk COMPUTER: Elappy disk COMPUTER: IBM PC compatible COMPUTER: IBM PC compatible COMPUTER: BAPEICATION DATA: APPLICATION NUMBER: US/08/652,265 FILING DATE: 23-MAY-1996 CLASSIFICATION: 514 | ATTORNEY/AGENT INFORMATION: NAME: Smith, William M. REGISTRATION NUMBER: 30,223 REFERENCE/DOCKET NUMBER: 17957-000500 TELECOMMUNICATION INFORMATION: TELEPHONE: (415) 576-0200 TELEFAX: (415) 576-0300 INPORMATION FOR EEQ ID NO: 1: SEQUENCE CHARACTERISTICS: LENGTH: 10825 base pairs |
| | RESULT Seque US-08-08-08-08-08-08-08-08-08-08-08-08-08- | NH |
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24d1(G)
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Hemochromatosis (HH) gene
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normal or wild-type (unaffected)
sequence surrounding variant for
allele (SEQ ID NO:20)"
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normal or wild-type (unaffected)
sequence surrounding variant for
allele (SEQ ID NO:41)"
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LOCATION: replace(5834, "g")
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US-08-652-265-1
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NAME/KEY: allele
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LOCATION: 5507..6023
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                                                                                                               TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTGG
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                                                                                                     TCAACCCTATCCGCAAGCCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGC
CAGGGGCGCTTGCTGCGTGAGTCCGAGGGCTGCGGGCGAACTAGGGGCGCGCGGGGGTG
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| Db 144 | 41 TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACACTTTGAGTTTTGGTA 1500 | |
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| Qy 150 Db 150 | 01 CTACGTGTATCCACATTTTACACATGAACAATGAGGCATGCACGGCCTGCTTCCTGG 1560 | |
| Qy 156 Db 156 | 61 CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC 1620 | |
| Oy 162 Db 162 | 21 TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG 1680 | |
| Qy 168 Db 168 | B1 AAATATTCATTGTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC 1740 | |
| Qy 174 Db 174 | 41 CAAGGGAGAGGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA 1800 | |
| Qy 180 Db 180 | 801 GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA 1860 | |
| Qy 186 Db 186 | 61 GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACATTGAGCAGAGACATGAAGGA 1920 | |
| 192 | 921 AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGCCTGGCAAG 1980 | |
| 198: | 981 TIGGATTAAAAGGGGGTTTTCTCAGCACTACTCATGTGTGTG | |
| 204 | 41 CGCGTGGGGGTGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT 2100 | |
| 210 | 01 CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT 2160 | |
| 2161 | 61 AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA 2220 | |
| 222 | 221 AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA 2280 | |
| 228 | 81 GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGATTCTAGCCAAGGAGTA 2340 | |
| 234 | 41 ACAGIGATCIGICACAGGCTITITAAAAGATIGCICTGGCTGCTAIGIGGAAAGCAGAAIG 2400 | |
| 240 | 01 AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGGAAGCTGTTACACAGTCCAGGCAAG 2460 | |
| 246 | 61 AGGTAGTGGAGTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA 2520 | |
| 252 | 21 Tatattctgaaggaagttgctgaaggattctatgttgtgtgagagaaagagagag | |
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GCTGGGTGTGGCATGCACCTGTGATCCTACTACTCGGGAGGCTGAGGTGGAGGTTA TTCTGAGATGGTGAAGGCAGAGGAAAGAGCAGTTTGGGGGTAAATCAAGGATCTGCATTTG 3001 GGACATGTTAAGGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACCTTAAC ATTTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCAAATCATGAGTATTGGAATAGGAT **ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCTTCACAAATGAGGA** GCTGGGTGTGGTGCCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA TGACTTTGTTCTTTATTTAATTTTATTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT TGGTGAAACCCCATGTCTACTAAAAATACAAAATTAGCCTGGTGTGGGGGGGCACGCCT ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT CTCAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG ATTTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTGTACAAAAATAA GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT q ð ă ð ð ð ð

4800 4980 5040 5040 5100 5100 5160 5160 5220 5220 5280 5340 5340 5400 5400 5460 5460 5520 5520 5580 5580 5640 5640 5700 5700 5760 5760 5820 5880 5280 CAGAGATATACGTNCCAGGTGGAGCACCCAGGCTGGATCAGCCCCTCATTGTGATCTGG AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGGTGAGACTCCATCTTAAAAAA AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC AGGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATTTACATGTG AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG 5041 5341 5401 5521 4921 5101 5161 5161 5221 5281 5341 5521 5581 4801 4861 4921 4981 5041 5101 5221 5401 5461 5641 5641 5701 5701 5761 4741 4801 4861 4981 5281 5461 5581 5761 5821 Qy Db a Qγ Db Ω g οy qq οy Db ò g ο̈́ D ολ Ω οy Ω οy OD δ QQ δy Ωp ò g οy Db Qγ Dp ò Db ò q ò

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| AGAGATATACGTGCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGATCTG | GOTATGLONGIONI GANGANGCAGGANGLIGAGAAAALLIATTGGGGGTTGAGAGGGTGCC | TGAGGAGGTAATTATGGCAGTGAGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG | GTGGCAATCAAAGGCTTTAACTTGCTTTTTCTGTTTTAGAGCCCTCACCGTCTGGCACCC | TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT | TGTTCATAATATTAAGGAAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT | TAGTACCTCTGCCCCAGGCCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGGG | AAGCATTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAGAAAT | AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAGTAAATGTAGTTAAAGAAG | ACCCATGAGGTCCTAAAGCAGGAAGCAAGAATGCTTAGGGTGTCAAAGGAAAGAATG | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAGAGCTGGATTCCA | TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT | AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGAAAAAA | GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGGGGCCCACGATCTCCCTTATATGGTG | aatgtgttgttaagaagttagatgagaggtgaggcgagaccagttagaaagccaataagca |
| 5821 | 88 | 5941 | 6001 | 6061 | 6121 6121 | 6181 6181 | 6241 | 6301 6301 | 6361 6361 | 6421 | 6481 | 6541 6541 | 6601 | 6661 | 6721 6721 | 6781 6781 | 6841 6841 | 6901 |
| dg y | S 8 | Qy Dp | Qy | Qy Db | Oy Dp | Qy | Qy Db | Qy Db | Qy | Qy Db | Oy Db | Qy Db | Qy | Oy Db | Qy Db | Qy | Qy Dp | Qy |

7140 7140 7200 7260 7320 7320 7380 7440 7440 7560 7560 7620 7680 7740 7740 7620 7800 7860 7800 8040 TICCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAAACTAGAGACTCAAAGA ACATACACCTATGTCATTTCATTTCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGGA GTGAATGAGGAAAATAAGGAAGAGAGAAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT CTTTCCTGGGTCTCTTGTCTCCACAGGAGGCCATGGGGGCACTACGTCTTAGCTGAACG GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAGATTTCCCCAT TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA 6961 6961 7021 7021 7081 7081 7141 7141 7201 7201 7261 7261 7321 7321 7381 7381 7441 7501 7561 7441 7501 7561 7681 7741 7981 7621 7681 7741 7801 7801 7861 7861 7921 7921 7981 Db δ g à g Ω qq Ω q Qγ g QY g ΟŽ g Qγ g Óγ g QΥ g Q_{Y} QQ ΩŽ g οy g ò q δy g δý g g ò

| 100 100 | 160 160 | 220 220 | 280 280 | 340 340 | 400 | 460 460 | 520 520 | 580 580 | 640 640 | 700 | 09/ | 820 820 | 880 | 940 940 | 000 | 090 090 | 120 120 | 180 |
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| CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT 8 | TTCTTTTTAAATGAAGAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC 8 | AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 8 | TAACATGGTGAAACCCCATCTCTAATAAAATACAAAAAATTAGCTGGGGGTGGTGGCAG 8 | AGGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGAGAGAATGGCATGAACCCAGGAGG 8 | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCTAGGTGACAGAGTGAGA 8 | CTCCATCTCAAAAAAATAAAAATAAAAATAAAAAATGAAAAAAAA | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG 8 | 1 TTTGATACATCTCGGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | 1 GGAAGGAGAIGGCICTICTCTIGICTCATIGIGITICTICTGAGTGAGCTIGAATCACAT 8 | 1 GAAGGGGAACAGCAGAAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC 8 | CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCATTCA 8 | 1 TTTCTTTGGACCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 8 | 1 TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC 8 | 1 CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG 8 | 1 GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA 9 | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA 9 | AAAGAGTCTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT 9 | CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA 9 |
| 8041 | 8101 | 8161 | 8221 | 8281 | 8341 | 8401 | 8461 | 8521 | 8581 8581 | 8641 | 8701 8701 | 8761 8761 | 882 | 888 | 894 | 006 | 906 | 912 |
| Qy | Qy Dp | Oy Op | Qy Dp | ç q | Sy Dp | Qy Dp | Oy Dp | Oy Dp | Q Dp | Oy Dp | oy Dp | Oy Dp | P Q | Qγ | Qy Dp | oy Op | λό | ò |

10140 10080 10080 10140 9300 9360 9360 9420 9480 9480 9540 9540 0996 0996 9720 9720 9780 9840 9840 9900 0966 0966 9180 9420 9600 9600 9780 AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT **ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTTAGCAAAGATATCTCATCTCTTCTT** TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC AGGTAAGCATTTGTTTTATATTGGTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCCT TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA 9481 9841 9841 9961 10141 9241 9301 9361 9421 9481 9541 9601 9601 9661 1996 9721 9721 9781 9781 9901 9901 1966 9121 9181 9181 9241 9301 9361 9421 9541 10021 10141 10021 10081 10081 10201 Db g g δy δ OD QQ QQ Q ΟŊ q δ οy g q οy Ob Qγ g οy q οy g οy g Ω g QY Db οy qq ΟŸ Qγ Q Ω οy

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ATTORNEY/AGENT INFORMATION:
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                                                                                                                                                           TYPE: nucleic acid STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3852..3891
                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
Matches 10823; Conser
                                                                                                                                                                                                                                            NAME/KEY: CDS
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                                                                                                            10381 GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCACGGTGATGCAG 10440
                                                                                                                                                                                                                                            10681 TGAGAGGTACAGGCCAAAATTCTTATGTTGTATTATAATAATGTCATCTTATAATACTGT 10740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10741 CAGTATTTATAAAAACATTCTTCACAAACTCACACACATTTAAAAACAAAACACTGTCTC 10800
10321 CATTTTAAATTCTTATTCACCTCTGGCAAAACCATTCACAAACCATGGTAGTAAAGGAAA 10380
                                                                                                                                                                                                                                                                                        10261 TTTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG
                                                                                                                                                         10381 GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG
                                                                                                                                                                                                                          CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA
                                                                                                                                                                                                                                                                                                                                                     10561 CTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACACA
                                                                                                                                                                                                                                                                                                                                                                                                                      AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10741 CAGTATTTTATAAAACATTCTTCACAAACTCACACACATTTAAAAACAAAACAGTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Thomas, Winston J.
APPLICANT: Thomas, Winston J.
APPLICANT: Drayna, Dennis T.
APPLICANT: Breder, John N.
APPLICANT: Ruddy, David
APPLICANT: Ruddy, David
APPLICANT: Tsuchhashi, Zenta
APPLICANT: Wolff, Roger K.
TITLE OF INVENTION: Hereditary Hemochromatosis Gen
NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
ADDRESSEE: Townsend and Townsend and Crew LLP
STREET: Two Emmarcadero Center, Eighth Floor
CITY: San Francisco
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ZIP: 94111-3834
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10801 TAAAATCCCCAAATTTTTCATAAAC 10825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US/08/652,265
FILING DATE: 23-MAY-1996
CLASSIFICATION: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10801 TAAAATCCCCAAATTTTTCATAAAC 10825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; Sequence 3, Application US/08652265
; Patent No. 6025130
; GENERAL INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-652-265-3
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 TCAGGATTTAAAAACCAAGGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCCG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 TCTAAGGTTGAGATAAAATTTTAAATGTATGATTTGAATTTTGAAAATCATAAATTTTA 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 TCTAAGGTTGAGATAAAATTTTAAATGTATGATTGAATTTTTGAAAATCATAAATATTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTGCTGTAGGAGAGAGACTAAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 10825;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881, LOCATION: 6040..6153, 7107..7147)

OTHER INFORMATION: /product= "Hereditary Hemochromatosis OTHER INFORMATION: muttation"

OTHER INFORMATION: muttation: /press INFORMATION: /press | "Hereditary Hemochromatosis (HH) OTHER INFORMATION: /press | "Hereditary Hemochromatosis (HH) |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .....arton: replace(5834, "a")

OTHER INFORMATION: /Phenotype= "Hereditary Hemochromatosis OTHER INFORMATION: /Label= 24d1
US-08-652-265-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION: 5507..6023
OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: genomic sequence surrounding variant OTHER INFORMATION: for 24d1(A) allele (SEQ ID NO:21)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEX: -
LOCATION: 140..7319
OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: 24d1 allele cDNA (SEQ ID NO:10)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOCATION: 3852..3891
OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: genomic sequence surrounding variant OTHER INFORMATION: for 24d2(C) allele (SEQ ID NO:41)" PEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.0%; Score 10823;
100.0%; Pred. No. 0;
tive 0; Mismatches
                                                                17957-000500
                                                   REFERENCE/DOCKET NUMBER: 179
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 576-0200
TELEFAX: (415) 576-0300
INFORMATION FOR SEQ ID NO: 3:
SEQUENCE CHARACTERISTICS:
NAME: Smith, William M. REGISTRATION NUMBER: 30,223
                                                                                                                                                                                                                                                                                                                                                              MOLECULE TYPE: DNA (genomic) FEATURE:
                                                                                                                                                                                                                                                 10825 base pairs
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| GAGATTTAACGGGGACGTGCGGCCAGAGCTGGGGAA 360 | TICTCCTCCTGATGCTTTTGCAGACCGCGGTCCTG 420 | CGAGGGCTGCGGGCGAACTAGGGGCGCGGGGGGTG 480 | TTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC 540 | CCTACTITCIGCGTCCAGACCCCGTGAGGGGGGGG 600 | CCCTCGCCCAGGACCTGCCCCTCCCCGGCTGT 660 | AACCGCCCACTCCCTTCCCCAACTAGAATGCTTT 720 | TGAGCTGAGCTAGGGCTCCTTGAACCTGG 780 | CTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG 840 | GAGAAGGCTGAGCAACCCACAGCAGGATCCGCACGG 900 | TTGGCCGGTGGGGCGCGAAAGAGTGCCGTTGGGGA 960 | CTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT 1020 | TCGGCCCTTCCCCACTCTTGGCAATTGTTCTTTT 1080 | TAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG 1140 | SCTGTGTAATTAAGAGGCCTCTGTACAAAGTACTGA 1200 | CACTICIAAGITACATICATATCIGATCITATITGA 1260 | AGGAGCTAATAATACGTTTATTACTAGAAGTTAACT 1320 | TTCAGGTTACAAAGAACATAAATAATCTGGTTTTCTG 1380 | CTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG 1440 |
|--|---|---|--|---|--------------------------------------|--|---------------------------------------|---|--|---|--|---|---|---|---|---|--|---|
| TTTCCCGCCCCCAAAAGAAGCGG | ATGGGCCGCGAGCCAGGCCGGCGCT | CAGGGCGCTTGCTGCGTGAGTCCG | GAAAAATCGAAACTAGCTTTTTCTT | TCAACCCTATCCGCAAGCCCCTCTC | CTACCACTGAACTGCAGATAGGGGT | CCCGGCTCTGCGGAGTGACTTTTGGAACC | TAAATAAATCTCGTAGTTCCTCACTTC | 4 - 4 | rcttccctgagtgcttgcc | TTCCACCTCAGAACGAATGCG | TCTGAATTCTTCACCATTCCACCCACT | GGGAGGCTCCTGAGAGAGGCCTACC1 | 3AAAATTAAGTATATGT } | AGGCTTTA: AGGCTTTA: | TAATGAACATGTAAGCAATGCACTCACTTC | TTTCACTAGGCATAGGGAGGTAG | GGAATICAGAITATATAAACTCTTT | GTTATTTCAAGTACTA |
| 301 | 361 | 421 | 481 | 541 | 601 | 661 | 721 | 781 | 4 4 | 901 | 961 | 1021 | 1081 | 4 4 | 1201 | 1261 | 1321 | |
| oy Dp | Qy Db | QY Db | Qy Db | Qy | Qy Db | Qy Db | Oy Op | Oy Dp | Oy Db | Oy Dp | Oy Dp | Oy Db | Qy | Q Q | Qy | Qy | Qy | γŏ |

2460 2520 2280 2340 2340 2400 2400 2460 2040 2040 2100 2100 2160 2160 2220 2220 2280 1920 1440 1560 1620 1620 1680 1740 1740 1800 1800 1860 AGGTAGTGGAGTGGGTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGGCAGGAAGCTGTTACACAGTCCAGGCAAG AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA CAAGGGAGAGGAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAACATGAAGGA AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACACACTTTGAGTTTTGGTA 2461 2401 2401 1921 2041 2041 2161 2161 2221 2221 2281 2281 2341 1981 2101 2101 1861 1921 1981 1441 1501 1621 1681 1681 1741 1741 1801 1801 1861 1501 1561 1561 1621 1381 1441 qq P δ PP Qy g ò Dp g P Ω Óγ g $\dot{\Omega}$ qq δy QQ ōλ qq Q g δy qq Óγ Db Q οy οž Dp qq g δλ δy δy QΥ

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| 52 58 58 58 70 70 70 | 2760 2760 2820 2820 2880 2880 | 94 94 94 94 94 94 94 94 94 94 94 94 94 9 | 3120 3120 3180 3180 3240 | 3300 3300 3360 3420 3420 | 3480 3480 3540 3540 3600 |
|--|--|--|--|---|---|
| AGGTAGTGGAGTGGGCTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGA TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGAGAAACCATTGTCTCCTGA [111111111111111111111111111111111111 | GCTGGGGGGGGAGCCACCACGTGATCCTAGCTACTCGGGGGGGG | TGACTTGTTCTTTTTATTTTTTTTTTTTTTTTTTTTTTT | CAGTGTAAGAATTCAGGACCAAGGCTGGCGCGGGGCTCACTTCTGTAATCCCAGCACT | 1 ATGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG 1 ATGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAATCCCTTGAACCCAGGAGGTGCAGG 1 ATGTCCCAGGTTTTCAGGAGGCTTAGGTAGCAGAATCCTTTGAACCCAGGAGGTGCAGG 1 TTGCAGTGAGGTTTCTGGCCCTCCCAGCCTGGGTGAAAAAAAA | TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACATAAC |
| 5 2 2 3 5 5 2 6 6 4 4 6 6 6 4 4 6 6 6 6 4 6 6 6 6 6 | 2701 2701 2761 2761 2821 2821 2881 | 94 94 00 | 3061 3061 3121 3121 3181 | 3241 3241 3301 3361 3361 | 3421 3421 3481 3481 3541 |
| 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | a cy a cy | 0y 0y 0y | 0y 0y 0y 0b | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 |

3720 4080 4200 4260 4440 4440 3780 3780 3840 3840 3900 3900 3960 3960 4020 4020 4140 4140 4200 4260 4320 4320 4380 4380 4500 4500 4560 4560 4620 4680 4680 4080 CCTCTTCATGGCTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTTGTGCTAGA 4141 GAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGATGGTGGAAATAGGGCCCTATTCCTT TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG 4501 GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCCAGGTTCACACTCTCTGCACTA CGTGGATGACCAGCTGTTCCTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCCGAAC TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCTGAA AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG 4021 CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGGAAGAGAGGGAAG 4141 GAATITIGCTTCCTGAGATCATITIGGTCCTTGGGGGATGGTGGAAATAGGGACCTATTCCTT CAGGACCACCTTGAATTCTGCCCTGACACTGGATTGGAGAGCAGCAGAACCCAGGGCC 4381 TGGCCCACCAAGCTGCAGTGGGAAAGGCACAAGATTCGGGCCAGGCAGAACAGGGCCTAC CTGGAGAGAGGGACTGCCCTGCACAGCTGCAGGTTGCTGGAGCTGGGGAGAGGTGTTTTG CCAGACACACCTGATGGTATGAGGTGCAGGTGTGGGAGCCTCAACATCCTGCTCCC 4621 3961 4201 3601 3781 3781 3841 3961 4321 4321 4441 4501 4561 4561 3661 3721 3721 3901 4081 4621 QQ g qq g qq Qγ Op QΣ οq ΩÝ g δŽ Ω δŏ g δλ QQ QΥ Ωp Qγ Qγ Ωp Ωy Dp δ δ qq Ωÿ δ QΫ g οy g δy

| TGAGACAGCCACAAGTCAFGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAGGGAA [|
|---|
| ARATTCAGAAATGTCAAGGCCGGCCACGGTCACCTTTTTTTT |
| AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA |
| CTCTAAAAAATACAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA |
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| aaaaaaaaaaaaaaaaggaattcagagatctcagctatcatatgaataccgggacaaa |
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| 0069 | 0969 | 7020 | 7080 | 7140 | 7200 | 7260 | 7320 | 7380 | 7440 | 7500 | 7560 | 7620 | 7680 | 7740 | 7800 | 7860 | 7920 | 7980 |
|--|---|--|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|
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| 6841 | 6901 6901 | 6961 6961 | 7021 7021 | 7081 | 7141 | 7201 | 7261 | 7321 7321 | 7381 7381 | 7441 | 7501 7501 | 7561 7561 | 7621 7621 | 7681 7681 | 7741 | 7801 | 7861 | 7921 |
| qq | Qy Db | Qy Db | QY | QY | QY | Qy Db | Q O O P | QY | Oy Dp | Oy Dp | Qy Db | Qy Dp | Qy Db | QY Db | Qy Dp | Qy Dp | Qy Dp | Qy Db |

| Ωy | 7981 7981 | ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA 8040 |
|----------|--------------|--|
| Qy Dp | 8041 | MCTICITACAATAATICIAIGAGATAGGIACTATIATCCCCAT 8 |
| ço D | 0 0 | TCTTTTTAARTCAAGAAAGGGAAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC 816 |
| δλ | 16 | CACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 822 |
| a v | 8221 | GCACITIOGGAGGCCAAAGCCGGGIGGATCACGAGGICAGGAGAICGAGGACCAICCIGGC AACAIGGIGAAACCCCAICICIAAIAAAAAIACAAAAATACAAAAAITAGCIGGGCGIGGIGGGCGA |
| · A | 0 | |
| Qy | 8281 | CGGAAGGCTGAGG |
| Qy | 34 | AGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 8 |
| qq | 8341 | AGAGCITGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 840 |
| QY Db | 8401 | CTCCATCTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAA |
| δy | 8461 | Ñ |
| QQ | 8461 | AGAGTATCTCATAGTTTGTCAGTGATAGAACAGGTTTCAAACTCAGTCAATCTGACCG 8 |
| QY | 52 | ເດ |
| QQ | 8521 | TTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA |
| Oy Op | 8581 | GGAAGGAGATGCCTCTTCTTGTCTCATTGTTTCTTCTGAGTGAG |
| Oy | 8641 | AAGGGGAACAGGAGAAAACAACCAACTGATCCTCAGGTGTGTTTCCTTTAAAAGTC 870 |
| qa | 8641 | |
| Qy | 8701 | CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCATTCA 8760 |
| qq | 8701 | cicaaggaaggicciggaargigacicciricciciciciritgciciritgcairca |
| QY | 9 / | 82 |
| qq | 8761 | TICTITIGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 88 |
| Οy | 8821 | CACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC 888 |
| QΩ | 8821 | TCACACACGGIGICCICCCIAGGCCAGIGCCICIGGAGICAGAACICIGGIGGIAIIIC 88 |
| Qγ | 88 | 94 |
| qo | 8881 | CTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGT |
| QY | on 0 | 00 |
| an | 4, | CIIAGAGGAIGCCCAGGICCIICCAIGGAGCCACIGGGGIICCGGIGCACAIIAAAAAA 900 |
| δ. | 00 | 90 |
| qa | 9001 | ICTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTT |

| Db 10141 CCAGTCTTCACAGTA | 10201 | 10261 | 10321 | 10381 | 10441 | 10501 | 10561 | 10621 | 10681 | 10/41 | Oy 10801 TABARTCCCCARTTT | RESULT 3 US-08-652-265-5 ; Sequence 5, Application | ; Patent No. 6025130 ; GENERAL INFORMATION: ; APPLICANT: Thomas, ; APPLICANT: Drayna, | APPLICANT: APPLICANT: APPLICANT: APPLICANT: | APPLICANT: WC TITLE OF INVEN NUMBER OF SEQU CORRESPONDENCE | ADDRES STREET CITY: STATE: | COUNTRY 1 USA ZIP: 94111-3834 COMPUTER READABLE FO MEDIUM TYPE: Flop COMPUTER: ISM PC COMPUTER: ISM PC COMPUTER: ISM PC COMPUTER: SYSTEM: |
|---|--|---|--|--|--|---|--|--|--|--|---|--|--|--|---|---|---|
| 9061 AAAGAGTCTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCATGGT 9120 11111111111111111111111111111111111 | 9121 CTGGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA 9180 | 9181 AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTGTATTTTTAGTAGA 9240 | 9241 GACAGGETITCACCATGITGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC 9300 | 9301 IGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCGGTCAAA 9360 | 9361 AGAGTCTTAATATATATATCCAGATGGCAFGTTTACTTTATGTTACTACATGCACTTG 9420 | 9421 GCTGCATAAATGTGGTACAAGCATTCTGTCTGAAGGGCAGGTGCTTCAGGATACCATAT 9480 | 9481 ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTCTTCTT 9540 | 9541 TTAAACCATTTTCTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGTAAAGTGTGATTT 9600 | 9601 ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG 9660 | 9661 IGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA 9720 | 9721 TATACTTTAATAAATGTATATGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC 9780 | 9781 ATCTIGIGIAIAIACTTAATCGCTITGTCATTTTGGAGACATTTATTTGCTTCTAATTT 9840 111111111111111111111111111111111111 | 9841 CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT 9900 | 9901 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC 9960 | 9961 CATTCTGAAAGCATATGACAAATTATTTCTCTTAATATCTTACTATACTGAAAGCAGA 10020 | / 10021 CIGCTATAAGGCITCACTTACTCTACCTCATAAGGAATAIGTTACAATTAATTTATT 10080 | 10081 AGGTAAGCATTTGTTTTATATTGGTTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC 10140 |
| Ş 2 | 9. Pb | Q Ob | o o | Q do | 9 | o o | Q do | O Ob | Q Q | ç a | o o | oy Ob | ç G | ç, q | Oy Dp | oy Op | da ya |

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                                                                                           CTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA 10500
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LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881,
LOCATION: 6040..6153, 7107..7147)
OTHER INFORMATION: /Product= "Hereditary Hemochromatosis OTHER INFORMATION: mutation"
OTHER INFORMATION: /OTHER INFOR
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CTHER INFORMATION: /Phenotype= "Hereditary Hemochromatosis OTHER INFORMATION: /label= 2442

is OTHER INFORMATION: /label= 2442
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gene 24d2 allele"
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OTHER INFORMATION: /note= "start and stop positions for
OTHER INFORMATION: genomic sequence surrounding variant
OTHER INFORMATION: for 24d2(G) allele (SEQ ID NO:42)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: -
LOCATION: 5507..6023
OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: genomic sequence surrounding variant OTHER INFORMATION: for 24d1(G) allele (SEQ ID NO:20)" NAME/KEY: allele
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OTHER INFORMATION: /note= "start and stop positions OTHER INFORMATION: 24d2 aliele cDNA (SEQ ID NO:11)"
FEATURE:
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larity 100.0%; Pred. No. 0;
Conservative 0; Mismatches 2;
       #1.30
PatentIn Release #1.0, Version
                                                                                                                                                                                                                                                                                          17957-000500
                          CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/652,265
FILING DATE: 23-MAY-1996
CLASSIFICATION: 514
                                                                                                                                                                ATTORNEY/AGENT INFORMATION:
NAME: Smith, William M.
REGISTRATION UNDRER: 30,23
REFERENCE/DOCKET UNDRER: 17957
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 576-0200
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: DNA (genomic)
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TYPE: nucleic acid
STRANDEDNESS: single
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| GGAATTCAGATTATATAACTCTTTTCAGGTTACAAAGAACATAAATAA | AIGITATITICAAGTACTACAGCIGCTICTAATCITAGTIGACAGIGATITIGCCCIGTAG | TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAGCACAGCACTTTGAGTTTTGGTA | CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG | AATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAG | TATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTTCATGTTGAGCAG | AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCCC | CAAGGGAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA | GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA | AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG | TTGGATTAAAAAGGGGGTTTTCTCAGCACTACTCATGTGTGTG | CGGCGTGGGGGTGGGAAGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT | CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCGGTCTTGACAACACAAAATGTCTCT | AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA | - AATAAACAAGTAGTGCTGGGGGGGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA | GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | AAGGGAGCAACAG |
| 1321 | 1381 | 1441 | 1501 | 1561 | 1621 | 1681 1681 | 1741 | 1801 | 1861 | 1921 | 1981 | 2041 | 2101 | 2161 | 2221 | 2281 | 2341 | 2401 |
| Qy Dp | O, | Qy | Qy | Qy | oy ob | oy Ob | Qy Db | Qy Dp | Qy Db | Qy Db | 0y Dp | Qy Dp | Qy Db | Oy Dp | oy D | Oy Dp | ζό | γ |

3420 3480 3540 TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA 3180 3240 3240 3300 3360 3360 3420 3480 3000 3000 3060 3060 3120 3120 2820 2880 2460 2520 2640 2700 2700 2760 2760 2820 2880 ATTTCTAGAATCCACCAGCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT CAGTGTAAGAATTCAGGACCAAGGCTGGCCACGGTGGCTCACTTCTGTAATCCCAGCACT TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT GCTGGGTGTGGTGCATCCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTA TGACTTTGTTCTTTATTTTATTTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT TICTGAGATGGTGAAGGCAGAGGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG GTTCAAGACCAGCCTGGGCAACACAGCAAAAACCCCTTCTTACAAAAAATACAAAAATTA TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCTACTTCAGC TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAGAGAAATTGG **AGGTAGTGGAGTGGGCTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA** CIGGGIGIAGTAGCICAIGCCAAGGAGGAGGCCAAGGAGAGCAGAIICCIGAGCICAGGA 3241 3001 3121 3181 3181 3241 3301 3361 3361 3481 2881 2941 3061 3061 3121 2821 2941 3001 2401 2461 2521 2521 2581 2581 2641 2641 2701 2761 2761 2821 2881 2461 2701 a g δy qq g q d ò Ω Dp δλ Db QΫ́ qq ολ g οy qq ò g ٥y g Ω g Q g οy Q QΥ Q Q ÓΫ Óγ g δy

| | 4 5 5 9 9 9 9 7 7 7 8 8 9 9 9 | CTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 354 GGCAGTGAGGGGGGGGCAGCCAGTGTGGCAAAAGCACCAAGGAAAGAGC 360 GILIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII |
|----------------|-------------------------------|--|
| P SY | 3961 | AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAATCACAACCACAG 4020 |
| oy Op | 4021 | CAAGGGTATGTGGAGGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 4080 |
| Oy Dp | 4081 | ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGGAGGGAAGAGAGAG |
| Qy Dp | 4141 | GAATITGCTICCTGAGATCATITGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT 4200 |
| Qy Dp | 4201 | TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACCACCCTGCAGGTCATCTG 4260 |
| Oy Dp | 4261 | GGCTGTGAAATGCAAGAAGACAACAGTACCGAGGCTACTGGAAGTACGGGTATGGTGGG 4320 |
| λά Q | 4321 | CAGGACCACCTTGAATTCTGCCCTGACACACTGGATTGGAGAGCAGCAGAACCCAGGGCC 4380 |
| oy Db | 4381 | TGGCCCACCAAGCTGGAAAGGCACAAGATTCGGGCCAGGCAGAGAGGCCTAC 4440 |
| Oy Db | 4441 | CTGGAGAGGGACTGCCCTGCACCAGCTGCAGCTGCGGGGGGGG |
| Q _Y | 4501 | GACCAACAAGGTATGGTGGAAACACATTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG 4560 |
| Oy Db | 4561 4561 | AGGTIGCAGGGCACGGAAICCCIGGIIGGAGIITCAGAGGIGGCIGAGGCIGIGIGCCIC 4620 |

| o P | 5701 5701 | AGTIGGCTGAAGGATPATGGATGGCAAGGAGTTGGAACTTGATTG >/bU |
|----------|--------------|---|
| Q P | 5761 | CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG 5820 |
| ٥ م | 5821 | AGATATACGINCCAGGIGGAGCACCAGGCCTGGATCAGCCCCTCATGTGATCTGG 58: |
| A & i | 88 6 | GTATGTGACTGATGAGAGCCAGGAGAAAATCTATTGGGGGTTGAGAGGAGTGC 594 |
| o v | 5941 | GAGGAGGTAATTATGGCAGTGAGATGTGTGTGTGTTTTGTTAGGGGGTGGGGGGGG |
| qq | 5941 | GAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG 600 |
| Qy Dp | 6001 | GTGGCAATCAAAGGCTTTAACTTGTTTTTGTTTTAGAGCCCTCACCGTCTGGCACCC 6060 |
| οy | 90 | Q (|
| g | | AGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT |
| Qy Dp | 6121 | TGTTCATAATATTAAGGAAGGGAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 6180 |
| yo d | 6181 | TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGCAGAGGGGATCTGGCATCCATGGG 6240 |
| ò | 24 | SCATTITICICALITATATICITIGGGGACACCAGCAGCTCCCTGGGACACAGAAAT 630 |
| QQ | 6241 | AGACA |
| Oy Dp | 6301 | AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT 6360 |
| οy | 6361 | |
| QQ | 6361 | TCCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTA |
| Oy Db | 6421 | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG 6480 |
| Qy | | CCCCATGAGGTCCTAAAGCAGGCAGGAAATGCTTAGGGTGTCAAAG |
| QQ | 6481 | |
| Qy Dp | 6541 | ATCACATTCAGTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA 6600 |
| δλ | 0 | TAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGAGCAAGCA |
| QQ | 6601 | 3AGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGG |
| O.Y | 6661 | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 6720 |
| è | - 1 | GCTATCACTCACCAATTATGCATTTCTACCCCTGAAACATGTGGTGGTGGAAAAG |
| r q | | 78 |
| Vo | | GAATCAGAAAGAAGCCAGCTCATACAGAGTCCCAAGGGTCTTTTGGGATATTGGGTTATGA 6840 |

7560 7740 7560 7620 7680 7680 7740 7800 7500 0069 7020 7020 7140 7200 7260 7260 7320 7440 7440 GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAATTTCCCCAT CTTACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT TTGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGGATTCTTC CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG GCACCTGTCCCAGAAAAAGCATCATGGCTATCTGTGGGGTAGTATGATGGTGTTTTTAGC AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTGGGATGCTACTCTAGTAT CITICCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGGGGCACTACGTCTTAGCTGAACG TIAGGITICIGAGITCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG ACATACACCTATGTCATTTCATTTCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGGA TCACTGGGGTGTCATTGAAGGATCCTAAGAAGGAGGACCACGATCTCCCTTATATGGTG TGAGTGACACCAGCCTGCAGACTCACTGTGGGAAGGACAAAAACTAGAGACTCAAAGA GTGAATGAGGAAAATAAGGAAGAGAGAAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT 7621 7681 7801 7801 7681 7741 7741 7861 7381 7441 7561 7621 6961 7021 7081 7081 7141 7141 7201 7201 7261 7321 7321 7381 7441 7501 7501 7561 6841 6841 6901 6901 6961 7021 7261 6781 Dp g g δλ qq οy QQ Qγ g Qγ qq QY g ò g ΩÝ Db δy g ŏ g δ g ŏ Db οg g Óλ δy g g δ οy Ω QY Óγ

| 7920 7980 7980 8040 8100 8100 | 16 16 22 28 28 28 | 8340 8340 8400 8460 | 8520 8520 8580 8580 8640 | 8700 8700 8760 8760 8820 | 8880 8880 8940 8940 9000 |
|---|---|--------------------------------------|--|---|--|
| AGGIGICATACAGATITGCAAAGITIAAIGGIGCCTTCAITIGGGAIGCIACTCIAGTAT TCCAGACCTGAAGAATAATTTCTACCTGGTCTCTCTTGTTCTGAIAATGAAA | TTCTTTTTAATGAGAAGTGAAGTAGGCCGGCCACGTGCTCACGCTGTATC TTCTTTTTTAATGAAGAAGTGAAGT | ACGCCTGTAGTCCCAGCTACT | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG | GAAGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC | TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGTTTTC |
| 7861 7921 7921 7981 7981 8041 | 10 10 16 16 22 22 | 8281 8281 8341 8341 8401 | 8461 8461 8521 8521 8581 | 8641 8641 8701 8701 8761 | 8821 8821 8881 8941 8941 |
| 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | Oy Db Oy Oy | Oy Oy Oy | OX OX OX | 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 |

| Oy Dp | 9001 | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA | 0906 |
|----------|-------|---|--------------|
| Qy | 9061 | AAAGAGTCTTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT | 9120 9120 |
| Qy Dp | 9121 | CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGGGATTCTCCTGTCTCAGCCTCCCA | 9180 |
| Qy Db | 9181 | TTACAGGCGTGCACCACCATGCCCGGCTAAT | 9240 |
| Qy Dp | 9241 | GACAGGGTYTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC | 9300 |
| Qy Dp | 9301 | CTCCCAAAGTGCTGAGATTACAGGTGTGAGCCA | 9360 |
| QY | 9361 | AGAGICTTAATATATATATCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG | 9420 |
| 9y 0p | 9421 | GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCAFAT | 9480 |
| Qy | 9481 | ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTCTTTTTT | 9540 |
| Qy Dp | 9541 | TTTTGTGGTTAGAAAA | |
| Oy Op | 9601 | GCTCATIGTAGAAAAGCTA | 0996 |
| Š G | 9661 | TGAAAAACTAITAACAACTIGICTATTACCIGITAGIATTATIGITGCATTAAAAATGCA | 9720 9720 |
| Oy Db | 9721 | GTATTGTATACTGCATGATTTTA | 9780 |
| QY | 9781 | atacttaatcgcttgtcattttggagacattta | |
| Oy Db | 9841 | ACGGAATATTTCATTCAACTGTGGTAGCCG | 0066 |
| Qy Db | 9901 | IGTCGTCTAAGTTGTAAGACATTGGTTA | 6 |
| Qy Db | 9961 | CATTCTGAAAGCATATGACAAATTATTTCTCTTAATATCTTACTATACTGAAAGCAGA | 10020 |
| QY | 10021 | CTGCTATAAGGCTTCACTTACTCTTCTACCTCATAAGGAATATGTTACAATTAATT | 10080 |

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NAME/KEI: CUS
LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881,
LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881,
LOCATION: 6040..6153, 7107..7147)
OTHER INFORMATION: And 24d2 mutations"
OTHER INFORMATION: And 24d2 mutations"
OTHER INFORMATION: And 24d2 alieles"
OTHER INFORMATION: 24d1 and 24d2 alieles"
FEATURE:
NAME/KEY: -
LOCATION: 140..7319
OTHER INFORMATION: CDNA containing a combination of both OTHER INFORMATION: CDNA containing a combination of both OTHER INFORMATION: CDNA containing a combination of both OTHER INFORMATION: Statl and 24d2 alieles
OTHER INFORMATION: (SEQ ID NO:12)"
FEATURE:
NAME/KEY: -
LOCATION: 3852..3891
OTHER INFORMATION: /note="start and stop positions for OTHER INFORMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LOCATION: replace(3872, "g")
OTHER INFORMATION: /phenotype= "Hereditary Hemochromatosis
OTHER INFORMATION: /label= 2462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /phenotype= "Hereditary Hemochromatosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: genomic sequence surrounding variant OTHER INFORMATION: for 2442(G) allele (SEQ ID NO:42)" FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "start and stop positions for
genomic sequence surrounding variant
for 24d1(A) allele (SEQ ID NO:21)"
ZIP: 94111-3834

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPOTER: IBM PC compatible
COMPOTER: IBM PC compatible
CORFUTE: BM PC compatible
CORFUTE: BY PECCATION DATA:
SOFTWARE: PATENTIN Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/652,265
FILING DATE: 23-MAY-1996
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
NAME: SMITH, William M.
REGISTRATION NUMBER: 30,223
REFERRNCE/DOCKET NUMBER: 17957-000500
TELEPRAX: (415) 576-0200
INFORMATION EQUIPMENTION:
TELEPRAX: (415) 576-0200
INFORMATION FOR EGO ID NO: 7:
SEQUENCE CHARACTERISTICS:
LENGTH: 10825 base pairs
TTYPE: nucleic acid
STRANDBNESS: single
TOPOLOGY: linear
TOPOLOGY: linear
TOPOLOGY: linear
TOPOLOGY: linear
TOPOLOGY: linear
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llarity 100.0%; Pred. No. 0;
Conservative 0; Mismatches
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LOCATION: replace(5834, "a")
OTHER INFORMATION: /phenotype=
OTHER INFORMATION: /label= 24d1
US-08-652-265-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: - 5507.,6023
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OTHER INFORMATION:
FEATURE:
NAME/KEY: allele
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Best Local Similarity
Matches 10823; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: CDS
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10741 CAGTATTTATAAAACATTCTTCACAAACTCACACACATTAAAAACAAAAACAGTCTC 10800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CATITIPAATICITATICACCICIGGCAAAACCATICACAAACCATGGTAGTAAAGAGAA 10380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10381 GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG 10440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10441 CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA 10500
                                         10141 CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT 10200
                                                                                                                                                                                                                                                      AGGTAAGCATTTGTTTTATATTGGTTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC 10140
                                                                                                                                                CTATITIGAATIGCIGGAATCACAGGCCATIGCIGAGCIGCCIGAACTGGGAACACAACAG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGAGAGGTACAGGCCAAAATTCTTATGTTGTATTATAATAATGTCATCTTATAATACTGT
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Sequence 7, Application US/08652265
Patent No. 6025130
GENERAL INFORMATION:
APPLICANT: Thomas, Winston J.
APPLICANT: Preder, John N.
APPLICANT: Reder, John N.
APPLICANT: Ruddy, David APPLICANT: Ruddy, David APPLICANT: Tauchinash; Zenta APPLICANT: Wolff, Roger K.
TITLE OF INVENTION: Hereditary Hen TITLE OF INVENTION: Hereditary Hen NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10801
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1 TCTAAGGTTGAGATAAAATTTTTAAATGTATGATTGAATTTTGAAAATCATAAATATTTA 60

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Gaps

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Indels

2; DB 3;

Length 10825;

| 81 | 1141 CT/ | 01 | 1261 TT | 1321 GG | 1381 ATC 1381 ATC | | 1501 CT | | 1621 TA 1621 TA | 81 | T T | 0.1 | 1861 GA 11 1861 GA | 21 | | 2041 CG 11 2041 CG | 2101 CC | 2161 AA 2161 AA |
|---------|--|--|---|--|--|---|--|---|---|--|--|--|--------------------------|---|---|--|--|--|
| qa - | QQ Dp | QJ Dp | VO - | QY | QQ Dp | QY | QQ qq | QV da | QQ Dp | Oy Db | QY | Qy Db | QY Db | QV QD | QY | QQ DP | QY | QY |
| | AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT 120 | TTTAAAAACCAAGGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT 1 | IGGAGAGAGAGAACTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT 2 | GGCATCTCCTGAGCCTAGGCATAGCTGTAGGGTGACTTCTGGAGCCATCCCG | CCAAAAGAAGCGGAGATTFAACGGGGACGTGCGGCCAGAGCTGGGGAA | CGAGCCAGGCGCGCTTCTCCTCCTGATGCTTTTGCAGACGCGCGGTCTG | CAGGGCGCTTGCTGCTGAGTCCGAGGGCTGCGGCCGAACTAGGGGCGGGGGGGG | GAAAAATCGAAACTAGCTTTTTCTTTGCGCCTTGGGAGTTTGCTAACTTTGGAGGACCTGC 540 | TCAACCCTATCGGAAGCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGAGTGC 600 | 1948 1949 | CCGGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT 720 | TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAGGGCTCCTTGAACCTGG 780 | CAAACAGG 8 | TTCCCTGAGTGCTTGCGAGAAGGCTGAGCAAACCCACAGGAGGG 90 | GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGCGCGAAAGAGTGGCGTTGGGGA 960 | TCTGAATTCTTCACCATTCCACCCACTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT 1020 | GGGAGGCTCCTGAGAGGCCTACCTCGGCCTTTCCCCACTCTTGGCAATTGTTCTTTT 1080 | GCCTGGAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG 1140 |
| Н | 61 | 121 | 181 | 241 | 301 | 361 | 421 | 481 | 541 | 601 | 661 | 721 | 781 | 841 | 901 | 961 | 1021 | 1081 |
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| Qy 53 | 341 | AGGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATATTTACATGTG 5400 |
| Qy 54 Db 54 | 401 | AGGACAACCAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTAAGAGTCCAATCTTAGG 5460 |
| 2y 54 | 461 | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTCTGAAAAGGGTATTTCCTTCC |

5760 5940 5520 5580 5700 5760 5820 5880 5940 0009 0009 6060 6120 6180 6180 6240 6240 6300 6300 6360 6360 6420 6420 6480 6480 6540 0099 0099 TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC CTCATCCTTCCTCTTTCCTGTCAAGTGCCTTCTTTGGTGAAGGTGACATCATGTGACC AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAAGACGTATTG CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG CAGAGATATACGINCCAGGIGGAGCACCCAGGCCTGGATCAGCCCCTCATIGIGATCIGG GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGGTTGAGAGGAGTGCC TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGGTGGGCTGAGG GTGGCAATCAAAGGCTTTAACTTGCTTTTTCTGTTTTAGAGCCCTCACCGTCTGGCACCC GTGGCAATCAAAGGCTTTAACTTGCTTTTTTCTGTTTTAGAGCCCTCACCGTCTGGCACCC TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGGG TITGCAAGAGCTGTITAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG ACCCCATGAGGTCCTAAAGCAGGAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG TGTTCATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT **ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA** 5461 5581 5641 5701 5761 5761 5821 5821 5881 5941 1909 6241 5521 5521 5581 5641 5701 5881 5941 6001 6001 6061 6121 6121 6181 6181 6241 6301 6301 6361 6361 6421 6421 6481 6481 6541 Db qq QQ g οy qq QΥ Dβ qq Qγ qq qq qq pp qq Db Dβ q g QΥ Qγ οy QΥ δŽ Qγ QΥ Qγ Ω δy Ω QΥ ò pp g Ω ŏ

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| | TTCACACACGGGGCCTCCCTAGGCCAGTGCCTCTGGGGGTCAGAACTCTGGTGGTATTT | CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGT | GCTTAGAGGATGCCCAGGTCCTTC | TAACCAGGACATTCAGGA | AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT | CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCC | AGTAGCTGGGATTACAGGCGTGCACCATGCCCGGCTAATTTTTGTATTTTTAGTAG. | GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGC | CGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCGGCCGTCAAA | AGAGTCTTAATATATATATCAGATGGCATGTGTTTACTTTATGTTACTACACAGACACTT | GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCAT | ACAGCTCAGAAGTTTCTTCTTTAGG(| TAAACCATTTTCTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAAGTAAATGTGAT' | acgctcattgtagaaagctataaaatgaatacaattaaagctgttatttaa; | GAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAATGC. | atactttaataaatgtatattgtattgtatactgcatgattttattgaagttctgtf | ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT |
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Hereditary Hemochromatosis (HH) gene
allele"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881, LOCATION: 6040..6153, 7107..7147)
OTHER INFORMATION: /product= "Hereditary Hemochromatosis OTHER INFORMATION: /note= "No. 6140305mal or wild-type (unaf OTHER INFORMATION: Hereditary Hemochromatosis (HH) gene OTHER INFORMATION: allele"
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE:
NAME/KEY: -
LOCATION: 3852..3891
OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: normal or wild-type (unaffected) genomic OTHER INFORMATION: sequence surrounding variant for 24d2(C) OTHER INFORMATION: allele (SEQ ID NO:41)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note= "start and stop positions for normal or wild-type (unaffected) allele CDNA (SEQ ID NO:9)"
                                                     APPLICANT: Gnirke, Andreas
APPLICANT: Ruddy, David
APPLICANT: Tsuchihashi, Zenta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: Windows 95
SOFTWARE: FRASEO for Windows 95
SOFTWARE: FRASEO for Windows 05
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/834,497A
FILING DATE: 04-APR-1997
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/652,265
FILING DATE: 13-MAY-1996
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/630,912
FILING DATE: 16-APR-1996
CLASSIFICATION: 514
PRIOR APPLICATION S14
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/630,912
FILING DATE: 16-APR-1996
CLASSIFICATION: 514
PRIOR APPLICATION S14
ATTORNEY FAGENT INPORMATION:
NAME: POISSANT S14
ATTORNEY FAGENT INPORMATION:
NAME: POISSANT NUMBER: 28,462
REFERENCE/DOCKET NUMBER: 28,46
                                                                                                                                                                                                                                                                                              3: Pennie & Edmonds LLP
1155 Avenue of the Americas
Drayna, Dennis T.
Feder, John N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LOCATION: 140..7319
OTHER INFORMATION: ,
OTHER INFORMATION: 1
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                                                                                                                                                                                                                                                                                                                      STREET: 1155 Aver
CITY: New York
STATE: New York
COUNTRY: USA
ZIP: 10036-2811
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                                    APPLICANT:
APPLICANT:
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TCAACCCTATCCGCAAGCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGC 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 TCAGGATTTAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTTCCCCGCCCCCAAAAGAAGCGGAGATTTAACGGGGACGTGCGGCCAGAGCTGGGGAA 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATGGGCCCGCCAGCCAGGCCGCCTTCTCCTCTGATGCTTTTGCAGACCGCGGTCCTG 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAGGGGCGCCTTGCTGCGTGCGAGGGCTGCGGGCGAACTAGGGGCGCGCGGGGGTG 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 TCTAAGGTTGAGATAAAATTTTTAAATGATTGATTGAATTTTGAAAATCATAAAATTTA 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 TCTAAGGTTGAGATAAAATTTTAAATGTATGATTGAATTTTGAAAATCATAAATTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181 CTGCTGTAGGAGAGAGAACTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAAAAATCGAAACTAGCTTTTCTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 10825;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;
0
/note= "start and stop positions for
normal or wild-type (unaffected) genomic
sequence surrounding variant for 24d1(G)
allele (SEQ ID NO:20)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                      /phenotype= "normal or wild-type (unaffected)" /label= 24d2
                                                                                                                                                                                                                       NAME/KEY: allele
LOCATION: replace(3878, "a")
OTHER INFORMATION: 'Aphenctype= "normal or wild-type
OTHER INFORMATION: (unaffected)"
OTHER INFORMATION: /label= 24d7
                                                                                                                                                                                                                                                                                                                                                            LOCATION: replace(5834, "g")
OTHER INFORMATION: 'Thenotype= "normal or wild-type
OTHER INFORMATION: (unaffected)"
OTHER INFORMATION: /label= 24d1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.0%; Score 10823;
100.0%; Pred. No. 0;
ative 0; Mismatches
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| 099 | 720 | 780 | 840 | 006 | 096 | 1020 | 1080 | 1140 | 1200 | 1260 1260 | 1320 | 1380 | 1440 | 1500 | 1560 | 1620 1620 | 1680 | 1740 |
|------|--|--|---|---|--|---|---|--|--|---|--|--|--|---|--|--|---|--|
| | CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT | TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTGG | AACTCGGGTTTATTTCCCAATGTCAGCTGTGCAGTTTTTTCCCCCAGTCATCTCCCAAACAGG | AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGGAGCTCCGCACGG | GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGGCGCGAAAGAGTGGCGTTGGGGA | TCTGAATTCTTCACCATTCCACCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT | GGGAGGCTCCTGAGAGGCCTACCTCGGGCCTTTCCCCACTCTTGGCAATTGTTCTTTT [| GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG | CTAGGCTFTATTGATTTGCAATGTGCTGTAATTAAGAGGCCTCTCTACAAAGTACTGA | TAATGAACATGTAAGCAATGCACTCCAAGTTACATTCATATGATTACATATCTGATCTTATTTGA | TITTCACTAGGCATAGGGAGGTAGGCTAATAATACGTITATTITACTAGAAGTIAACT | GGAATTCAGATTATATAACTCTTTTCAGGTTACAAAGAACATAAATAA | ANGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG | TGTAGCACAGTGTTCTGTGGGTCACGCCGGCCTCAGCACCAGCACTTTGAGTTTTGGTA | CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG | CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC | TATGATICTTAAACATCACACTGCATTAGAGGTTGAATAATAAATTTCATGTTGAGCAG | - AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC |
| 601 | 661 | 721 | 781 | 841 | 901 | 961 961 | 1021 | 1081 | 1141 | 1201 | 1261 | 1321 | 1381 1381 | 1441 | 1501 | 1561 | 1621 | 1681 |
| . qa | QY Db | Oy Ob | Oy Db | Qy | oy Op | Qy Dp | Qy Dp | Qy Db | Qy Dp | Qy | Qy Db | Qy | Qy Dp | Qy | QY | 0y 0b | Qy | QY |

2340 2340 2400 2460 2460 2520 2580 2640 2640 2700 2760 2280 2280 2400 2520 2760 1980 2040 2040 2100 2100 2160 2160 2220 2220 2820 1800 1800 1860 1860 1920 1920 1980 AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC 1740 2461 AGGTAGTGGAGTGGGTGGGTAAAAAGGAATGAAAAACCGAAACCATTGTCTCTGAA AGGTAGTGGAGTGGGCTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTTACAAAAATACAAAAATTA GCTGGGTGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG CGGCGTGGGGGTGGGAAGGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAATGTCTCT 2101 CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAAAAATGTCTT AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA AATAAACAAGTAGTGCTGGGGAGTAGAGGCCCAAGAAGTAGGTAATGGGCTCAGAAGAGA GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGAGGAGAGAGCAGATTCCTGAGCTCAGGA GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA CAAGGGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA 2401 2581 2341 2701 2701 2341 2461 2581 2641 1681 1741 1741 1801 1801 1861 1861 1921 1921 1981 1981 2041 2101 2161 2161 2221 2221 2281 2281 2401 qq g δ g δ QQ g δy g δy Db QY q Qy Db δy QQ ōζ g Qγ Db Qγ Db Ω g δy g ΟŊ g ŏ Q QΥ Q δý δŽ ŏ g

| 3901 TCCA 3901 TCCA 3961 AGGG | 3961 AGGG 4021 CAAG | | 081 | 141 6 | 201 | | 21 C | 381 TG | | 501 | 561 | 21 2 | 4681 TGA 4681 TGA 4741 GTG | 741 G | 801 | 861 | 4921 ACC |
|--|-----------------------------------|--|--|---------------------------------|---|--|---------------------------------------|---|--|---|---|---|---|----------------------------------|---|--|--|
| Oy Db | qa XX | qa o | a d | qq & | ga 8 | ga ò | g | 3 A 8 | da d | g ag | d d | Oy Dp | o o | d d | d d | 7 A A | 6 G 6 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 2880 | 94 | 3000 | 3060 | 3120 3120 | 3180 3180 | 3240 | 3300 | 3360 | 3420 | 3480 3480 | 3540 | 3600 | 3660 | 3720 3720 | 3780 | 3840 | 3900 |
| 9-9 5 | y – y - y - y | CATTIG | GCAGTT | CCAGCACT | CCAACA | SCGCACGCCT | GTGCAGG GTGCAGG | rgagactctgt rgagactctgt | ATTTGGG ATTTGGG | CCTTAAC | ATAGGAT ATAGGAT | AAAGAGC AAAGAGC | ATGAGGA ATGAGGA | crecrece | CTGCACTA | TGGGCTA TGGGCTA | CCCGAAC |
| AAG 111 | TTGGCAATG | CAAGGATCTG(| CCACATAGG | CTGTAATCCC | AAGCTTGC | sergecec | CCAGGAGG | SAGTGAGI SAGTGAGI | CCTCAGGATT CCTCAGGATT | AGACACA(AGACACA(| TATTGGA TATTGGA | CACAAGG CACAAGG | TCACAAA TCACAAA | AACATCC | CACTCTC | GAAGCTT | GTGGAGC |
| IGAAAAAGAG | FGGGGTAATTC | FAAATCAA FAAATCAA | SGTGAGG SGTGAGG | SCTCACTICTC | TGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGG | GGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGG | GCTTAGGTAGGAGAATCCCTTGAACCCAGGAG(| GGTGATAGAGTG GGTGATAGAGTG | TCAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTC(| CCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACG | CCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT | GTGGCAGCCACGTGTGGCAGAGAAAGCACACAAGGAAGAGC | GGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAAT(| GATGCAGGTGTGTGGAGCCTCAACATCC | GGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTC | GTGCCTCAGAGCAGGACCTTGCTTTCCTTGTTTGAAGCTTTC | CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAA(|
| 20000 | reaccested | GGTGAAGGCACAGGAAAGACAGTTTGGGGTAAATC | GTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGT(| GGTGGCT GGTGGCT | CAGGAGT CAGGAGT | AATTAGC AATTAGC | AGAATCC | GAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGT(| CTGAAGG | CAACTAC | TGTCTAP | rggcagag rggcagag | ACTGCAAC ACTGCAAC | SGTGTGTG | CTGTCTCC TGTCTCC | GGTCTTT(| NATGAGA(CATGAGA(|
| | ATTGGCCTC ATTGGCCTC | AGAGCAG | TCAGGCT TCAGGCT | CAAGGCTGGGCACGGTGG | TTGAGGT | ATACAAA ATACAAA | AGGTAGG | TGCACTO | VAAAAAA VAAAAAA | CTGAGT1 | STGGAGTC | CCACGTGT CACGTGT | AGACAGGI AGACAGGI | TGATGCA(TGATGCA(| TGTTGCT TGTTGCT | GGACCTT GGACCTT | CTATGAT CTATGAT |
| GACAGAGCAAGACCTGTCTCC | TAATTT | AGAGGAA AGAGGAA | ATTCCAG | CCAAGGC | AGATCAT | ACTAAAA | GAGGCTT | GTGCCAC | AAAAAA | ACCAACTO ACCAACTO | AGCTTTA(| STGGCAGO STGGCAGO | GGAAGAA. GGAAGAA. | TATGAGT TATGAGT | TAAGGCC TAAGGCC | CAGAGCA CAGAGCA | TCGTGTT TCGTGTT |
| AGCAAGA AGCAAGA | TTTATT TTTATT | TGAAGGC TGAAGGC | GTTTGAG | TTCAGGA TTCAGGA | GGCAGGT | CATGTCT | SGTTTTCAGGAGG | TGAGAT | AAAAAAA | CCTGAGC | 5-5 | rgagggg rgagggg | GTCATATO GTCATATO | CTGATGG CTGATGG | ACATGGT ACATGGT | GGGTGCCT | CAGCTGT CAGCTGT |
| GTGACAG GTGACAG | GACTITGIICTITATIITAAIITIATIGG | rctgagatgg rctgagatgg | ATGTTAA | CAGTGTAAGAATTCAGGAC(| TGGCTGP TGGCTGP | GAAACCC | CCA CCA CCCA | GCAGTGAGG | AAAAAAA | CTAATTTGCC | TTCTAGAATC | CTGGGGCAGTGAGGGG | CCCAGGACTGTC | CAGACACAGCTGATGGTATGAGTT | CCTACTACACATG | CTTCAT | GGATGAC GGATGAC |
| 21 C | 81 T | 941 TTCT 941 TTCT | 3001 GGACATC 3001 GGACATC | 061 CAGT 061 CAGT | 3121 TTGC 3121 TTGC | 31 T 81 T | 241 ATAGTC 241 ATAGTC | 301 TT 11 301 TT | 361 CTC/ 361 CTC/ | 3421 TCT/ 3421 TCT/ | 481 ATTTTC | 541 | 601 601 | 661 C 661 C | 3721 CTC 3721 CTC | 3781 CCT/ 3781 CCT/ | 3841 CGT 3841 CGT |
| | 0y 28 | Oy 29 | Qy 3(| Oy 30 Db 30 | Oy 3: | Qy 311 | Oy 3 | Oy 3: | Qy 3 | Oy 3 | Qy 3 | | Oy 3 Db 3 | Qy 3 Db 3 | Oy 3 | Oy 3 | Gy Db. |

1AATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA ATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG CAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG GCCGAGGCGGGTGGTCAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA GCCCACCAAGCTGGAAAAGGCACAAGATTCGGGCCAGGCAGAACAGGGCCTAC STIGCAGGGCACGGAATCCCIGGITGGAGITTCAGAGGIGGCIGAGGCIGIGIGCCTC CATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGGAGCAGGGAAGAGGGAAG GACCACCTTGAATTCTGCCCTGACACACTGGATTGGAGAGCAGCAGAACCCAGGGCC TITIGCTTCCTGAGATCATTTGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT

| 5040 5100 5100 5160 5160 5220 5220 5280 | 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | 5520 5580 5640 5640 5700 5700 5760 | 5820 5820 5880 5980 6000 6000 6000 6060 |
|---|--|--|--|
| GCTAATTGGAAGGCTGAGCAGGAGCATCGATGAAGCGGAAGCTGGCACTGAGAGCGGAAGTTGCACTGAGCTGAAGAGCGGAAGCTGCACTGAAGAGCGGAAGTTGCACTGAGCACTGAAGAGCGGAAGTTGCACTGAGCACTGAGAAGCTGGGAAGTTGCACTGAGAAAAAAAA | CTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCCATCATTTCAATGCACATA | CACAAAATGGTGTCTCTCTAGCTTGTTTTTTCTGAAAAGGTATTTCCTTCTCTCTC | CCCAATGGGATGGGACTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG [|
| 4981 5041 5041 5101 5101 5161 5221 | 28 28 28 34 34 40 46 46 | 5461 5521 5521 5581 5581 5641 5701 | 5761 5761 5821 5821 5881 5941 6001 6001 |
| . O O O O O O O O O O O O O O O O O O O | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 |

| QC | 6061 | TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT 6120 | |
|----------------|------|--|-----|
| Οy | 6121 | TTCATAATATTAAGGAAGAGGCAGGCTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 61 | 0 |
| qq | | GTICATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 618 | 0 |
| Qy | 6181 | AGTACCTCTGCCCCAGGGCACAGAGGGGAAAGAGGGGCAGAGGGGGATCTGGCATCCATGGG 624 | |
| QQ | 6181 | TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGCACAGGGGATCTGGCATCGATGGG 6240 | 0 |
| QY G | 6241 | AAGCATTITICTCATTIATATTCTTIGGGGACACCAGCAGCTCCCTGGGAGACAGAAAAT 6300 | 0 |
| 3 8 | 1 6 | callillicicalitataticillesesacaccascasccressessasaaar 630 | 0 |
| dy Db | 6301 | ANGGITCTCCCCAGATGAAAGTCTCTATTCAACAAACATCTTCAGAGCACCTACTAT 6360 | 0 0 |
| Qy | 6361 | TCCAAGAGCTGTTTAAGGTAGTACTACGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT 642 | |
| q _Q | 6361 | 42 | |
| δλ | 6421 | CTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG 64 | 0 |
| qa | 6421 | CAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAGAAG 6 | 0 |
| Qy | 6481 | AAATGCTTAGGGTGTCAAAGGAAAGAATG 6 | 0 |
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| oy i | 54 | 9 | 0 |
| an an | ń | TCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA 660 | 0 |
| QY | 9 | TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA 6660 | 0 |
| qq | ق | AGGIGAGGITGAAGATGATGGGAGGTCTACACAGAGGAGCAACCATGCCAAGTAGGA 666 | 0 |
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| ογ | 6721 | GGTGTAGGGAAAAGA 678 | 0 |
| QQ | 6721 | CTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGGAAAAGA 67 | 0 |
| QY | 6781 | GCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA 684 | 0 |
| QQ | 6781 | AATCAGAAAGAAGCAGCTCATACAGAGTCCAAAGGGTCTTTGGGATATTGGGTTATGA 6 | 0 |
| QY | 6841 | TGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATAGGT | _ |
| qq | 6841 | CACTGGGGTGTCATTGAAGGATCCTAAGAAGGAGGACCACGACGATCTCCCTTATATGGTG 6 | 0 |
| QY | 6901 | TGAGGAGACCAGTTAGAAAGCCAATAAGC | _ |
| qq | 6901 | STGTTGTTAAGAAGGTAGATGAGAGGGGGGGGGGGGGGG | _ |
| Qy | 6961 | AGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATG | _ |
| QQ | 6961 | TCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATG 7 | _ |
| Qy | 7021 | TGAATGAGGAAAATAAGGAAGAGAGAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT 708 | _ |
| qq | 7021 | | _ |
| QY | 7081 | GCCATGGGGCACTACGTCTTAGCTGAACG 714 | _ |
| qq | 7081 | TTCCTGGGTCTCTTGTCTCCACAGGAG | _ |
| oy i | 4 | 20 | _ |
| q | 7141 | GAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACT | _ |

| 7260 7260 7320 7320 7380 7380 7440 | 50 50 56 | 7620 7620 7680 7680 | 7740 7740 7800 7800 | 7860 7860 7920 7920 | 7980 7980 8040 8040 | 8100 8100 8160 8160 | 8220 8220 8280 8280 |
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| GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGTTGAACCTAAACATAGAAATT GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGTTGAACCTAAACATAGAAATT GCGTGACGACCTCTTCTTTTCAGGAGAGATTGAACCTAAAACATAGAAATT GCCTGACGAACTCCTTGATTTTAGCCTTCTTTCATTTCCTCAAAAGATTTCCCCAT GCCTGACGAACTCCTTGATTTTAGCCTTCTTTCATTTCCTCAAAAGATTTCCCCAT TTAGGTTTCTGATTTTAGCCTTCTGTTCATTTCCTCAAAAGATTTCCCCAT TTAGGTTTCTGATTTTAGCCTTCTGTTCATTTCCTCAAAAGATTTCCCCAT TTAGGTTTCTGAGTTCTGATTTAGCCTTCTGTTCATTTCCTCCAAAAGATTTCCCCAT TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTCACTCCCCTCGGAACTG TTAGGTTTCTGAGTTCCTGCATGCCAGGAGCTTCCTTCATTTCCTCCCTC | CARCACCTANGEGER | AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCGGTTCAACTTTTCCT | CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG | | TCCAGACCTGAAGAATCACAATAATTTCTACCTGGTCTCTTGTTCTGATAATGAAA | CATGCATTACTGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCC CATGCATTACTGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCC CATGCATTACTGCATGCACTTCTTACAATAATTCTAGAGATAGGTACTATTATCCC TTCTTTTTAAATGAACAAAAGGAAGTAGAGCGGGGGGGGG | AGACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACC |
| 7201 7201 7261 7261 7321 7321 | 44 44 50 | 7561 7561 7621 7621 | 7681 7681 7741 7741 | 7801 7801 7861 7861 | 7921 7921 7981 7981 | 04 04 10 10 | 16 16 22 22 |
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9240 0906 9120 9120 9180 9180 9300 9300 9360 9360 8880 8880 8940 9006 9000 0906 AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG 9420 8340 8340 8400 8400 8460 8460 8520 8520 8580 8580 8640 8640 8700 8700 8760 8760 8820 8820 TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGGCCCAGCCGTCAAA CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTGTTGCTCTCTTGGCATTCA AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT CICGGCICACTGTAACCICTGCCICCCAGGTICAAGCGATICTCCTGTCTCAGCCTCCCA CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCTCTGTCTCAGCCTCCCA TICACACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG TITCITIGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC ACCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 9181 9241 9301 9301 9361 8941 9001 9061 9121 9121 9181 9241 8941 9001 1906 8461 8581 8641 8641 8701 8701 8761 8761 8821 8821 8881 8881 8281 8281 8341 8341 8401 8401 8461 8521 8521 8581 qq g Db 9 ò QQ qq Ωp οy qq δý Dp QΥ qq δy g QΫ Op QY Db δy g δý g Ω QΥ ά Ω g q QΥ δy Óγ δ g QY

Page 29

| Db 10441 | Qy 10501 Db 10501 | QY 10561 Db 10561 | Qy 10621 Db 10621 | Qy 10681 Db 10681 | Qy 10741 Db 10741 | Qy 10801 Db 10801 | RESULT 6 US-08-834- | ; Patent N ; GENERAL ; APPLI ; APPLI | ; APPLI ; APPLI ; APPLI ; APPLI | ; APPLI ; TITLE ; NUMBE ; CORRE | ; ADD ; STR ; CIT | COU COU | COM COPE CURREI | ; APP: ; FIL: ; CLA: ; PRIOR | ; APP) ; FIL: ; CLA(| ; APP] ; FIL: ; CLA! ; PRIOR | ; APP) ; FIL: ; CLAS | ; NAMI ; REG: ; REF! |
|----------|----------------------|--|----------------------|--|---|--|--|--|---|---|---|--|--|---|---|---|--|--|
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| , Db | Q Dp | Qy Db | Qy Db | QY Db | Qy Db | Qy Db | QY Db | oy Op | Qy Db | Oy Dp | Qy Dp | Qy Dp | Qy Up | QY | Qy Db | Qy Db | Qy Db | οy |

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STATE.

21P. 10036-2811

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM FC Compatible
OPERATING SYSTEM: Windows 95
SOFTWARE: FastSEQ for Windows Version 2.0b
CURRENT APPLICATION NUMBER: US/08/834,497A

TING DATE: 04-APR-1997
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RNEY/AGENT INFORMATION:
ME: POISSANT, Brian M.
GIGTRATION NUMBER: 28,462
FERENCE/DOCKET NUMBER: 8907-0056-999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NDRESSEE: Pennie & Edmonds LLP
REET: 1155 Avenue of the Americas
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TAAAATCCCCAAATTTTTCATAAAC 10825
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PR APPLICATION DATA:
PLICATION NUMBER: US 08/652,265
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ASSIFICATION: 514
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PLICATION NUMBER: US 08/632,673
LING DATE: 16-APR-1996
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04-APR-1996
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No. 6140305
AL INFORMATION:
JCANT: Thomas, Winston J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PLICANT: Thomas, Winston J.
PLICANT: Drayna, Dennis T.
PLICANT: Beder, John N.
PLICANT: Ruddy, David
PLICANT: Ruddy, David
PLICANT: Ruddy, David
PLICANT: Wolff, Roger K.
TLE OF INVENTION: HEREDITARY FRESPONDENCES: 76
RRESPONDENCES ADDRESS:
ADDRESSEE: Pennie & Edmonds LI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R APPLICATION DATA:
PLICATION NUMBER: C
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                                                                                                                                          NAME/KEY: CDS
LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881,
LOCATION: 6040..6153, 7107..7147)
LOCATION: 6040..6153, 7107..7147)
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OTHER INFORMATION: mutation"
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LOCATION: 5507..6023
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FEATURE: NAME/KEY: allele (SB4, "a")
OCTHER INFORMATION: /phenotype= "Hereditary Hemochromatosis OTHER INFORMATION: /label= 24d1
                                                                                                                                                                                                                                                                                                                                  /note= "start and stop positions for genomic sequence surrounding variant for 24d2(C) allele (SEQ ID NO:41)"
                                                                                                                                                                                                                                                                          for
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                                                                                                                                                                                                                                                             LOCATION: 140..7319
OTHER INFORMATION: /note= "start and stop positions
OTHER INFORMATION: 24d1 allele cDNA (SEQ ID NO:10)"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 10823; D
Pred. No. 0;
0; Mismatches
        TELEPHONE: 650-493-4935
TELEFAX: 650-493-5556
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 3:
SEQUENCE CHARACTERISTICS:
LENGTH: 10825 base pairs
TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 100.0%;
Matches 10823; Conservative
TELECOMMUNICATION INFORMATION
                                                                                                                    MOLECULE TYPE: DNA (genomic) FEATURE:
                                                                                            STRANDEDNESS: single
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                                                                                                          linear
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LOCATION: 3
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| SCACAGCACTTTGAGTTTTGGTA 1500 | GACAAGAATGAGGCATGGCACGGCCTGCTTGG 1560 | GCTCATGTCTCCACTTCATAGC 1620 | TAATAAAATTTCATGTTGAGCAG 1680 | ATGIGTTGCACTGITCAAGCC 1740 | TATTTGCATTCTAGTGGGAGA 1800 | atacaacatcaggaaatcatgggtgttgtga 1860 | ACTTGAGCAGAGACATGAAGGA 1920 | GCAAACTGAGTGGGCTGGCAAG 1980 | GTGTGTGTGGGGGGGGG 2040 | GTAGGATGTCTAGCAGTATCCTGT 2100 | GAGCACTCCCCCAGTCTTGACCAACCAAAATGTCTCT 2160 | TTAAGAAGCTCGGGTTGAAAAA 2220 | AGGTAATGGCTCAGAAGAGGA 2280 | TGTGAATTCTAGCCAAGGAGTA 2340 | IGGCTGCTATGTGGAAGCAGAATG 2400 | GAAGCTGTTACACAGTCCAGGCAAG 2460 | 3GGAGTGACAACCATTGTCTCCTGAA 2520 | GAAGAATTGG 258 |
|--|---|--|--|--|---|--|--|--|---|--|---|--|--|---|--|---|--------------------------------------|----------------------|
| TGTAGCACAGTGTTCTGTGGGTCACACGCCGGCCTCAG | CTACGTGTATCCACATTTACACATGACAAGAATGAGG | CAAATTTATTCAATGGTACACTGGGCTTTGGTGGCAGGCT | TATGATTCTTAAACATCACACTGCATTAGAGGTTGAAT | AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTV | CAAGGGAGAGAGGGAAACAAGTCTTTACCCTTTGATATT | GATGACAATAAGCAAATGAGCAGAAAGATATACAACAT | GAAGCAGAGAAGTCAGGCAAGTCACTCTGGGGCTGACACTTGAG | AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGG | TTGGATTAAAAAGCGGGTTTTCTCAGCACTACTCATGT(| CGGCGTGGGGGTGGGAAGGGGACTACCATCTGCATGT. | CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGT(IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGG | AATAAACAAGTAGTGGTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGG | GCCACAAACAAGGTTGTGCAGGGGGCTGTAGGCTGTGGTGTGT | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGG | AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAA | AGGTAGTGGAGTGGGTGGGAACAGAAAAGGGG | AAGTTGCTGAAGGATTCTAT |
| 1441 | 1501 | 1561 | 1621 1621 | 1681 1681 | 1741 | 1801 | 1861 | 1921 | 1981 | 2041 | 2101 | 2161 | 2221 | 2281 | 2341 | 2401 | 2461 | 2521 |
| δy | Qy Dp | Qy Dp | δγ | Ολ Dp | Qy | Sp Gy | Oy Dp | Qy Db | Qy Db | Qy | Oy Dp | oy Db | Qy | Oy Db | Qy Db | Qy | Qy | Qy |

2760 2700 2760 2820 2820 2880 2940 3000 3120 3120 3180 3180 3240 3240 3300 3300 3420 3420 3480 3480 3660 GCTGGGTGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA GTTCAAGACCAGCCTGGGCAACACAGCAAAAACCCCTTCTTACAAAAAATAAAATTA TTCTGAGATGGTGAAGGCAGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG ACCCAGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGCAGATTCCTGAGCTCAGGA TGACTITGTTCTTTATTTTAATTTTGGCCTGAGCAGTGGGGGTAATTGGCAATGCCAT GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTGTAATCCCAGCACT TTGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA ATAGICCCAGGITTICAGGAGGCTTAGGIAGGAGAATCCCTTGAACCCAGGAGGIGCAGG TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACCTTAAC TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGGTGGCGCGCCCT ATTTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT CTGGGGGCAGTGAGGGGTGGCAACGTGTGCCAGAGAAAAGCACACAAGGAAAGAGC 2641 2701 2761 2821 2881 3001 3061 3181 3241 3361 2521 2581 2581 2641 2701 2761 2821 2881 2941 2941 3001 3061 3121 3121 3181 3241 3301 3301 3361 3421 3421 3481 3481 3541 3541 3601 g qq qq QY qq Óγ φ g g οp q οy QΫ Óγ δλ g Qγ pp δ ΩD Db QQ QΥ Db g qq Ω Ω δλ δ δ ò a δy g δ

| CCAGACACTGTCATATGGAAGAAGACAGGACTGCAACTG CCAGACACACGCTGATGGTATGATTGATGCAGTGTTGGA CCAGACACACGCTGATGGTATGATTGATGATGCAGTGTTGGG CCAGACACACGCTGATGGTATGATTGATGATGATGTTGTGGGT CCAGACACACACTGTTAGGCTTTGATGATTGATGATGTTGTGCCACACACA |
|--|
| |

| QY | 4741 | GIGICTAIGGCCCTIGCITITIAITTAACCAATAAICITITGIATAITIAIACCIGITAA 4800 |
|----------|--------------|---|
| Oy Db | 4801 | AGAAATGTCAAGGCCGGGCACGTGGCTCACCCTGTAATCCCAGCACTTTGGG 48 |
| Qy | 4861 | TGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA |
| QY Db | 4921 | ACCCGTCTCTAAAAAATACAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA 4980 |
| Qy Db | 4981 | GCTAATTGGAAGGCTGAGGCAGGGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA 5040 |
| Qy | 5041 | GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGAGAGGAGACTCCATCTTAAAAAA 5100 |
| Qy Dp | 5101 | AAAAAAAAAAAAAAAAAAGAGAATTCAGAGATCTCAGCTATCATGATGAATACCAGGACAAA 5160 |
| Qy | 5161 | ATATCAAGTGAGGCCACTTATCAGAGTAGAAGAATCCTTTAGGTTAAAAGTTTCTTTC |
| QY | 5221 | 528 528 |
| Qy | 5281 5281 | |
| Qy | 5341 | 540 540 |
| QY | 5401 | |
| Qy | 5461 | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTTCTGAAAAGGTATTTCCTTCC |
| QY | 5521 5521 | 558 558 |
| QY | 5581 5581 | CTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC 5: |
| δλ Op | 5641 | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG 570 |
| Qy | 5701 5701 | AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG 576 |
| Qy | 5761 5761 | CCCAATGGGGATGGGACCTACCAGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG 5 |

0969 7080 7140 7140 7260 7320 7320 7440 7440 7380 7380 7500 7500 7560 7620 7620 7680 7680 7740 7740 7800 7800 7860 7920 8040 CTTTCCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGGGGGCACTACGTCTTAGCTGAACG GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAGATTTCCCCAT TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG GTGAATGAGGAAAATAAGGAAGAGAAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTAA TTGAATCCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC GCACCTGTCCCAGAAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGGTGTTTTTAGC AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCAATAT TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT 7141 6961 7021 7741 (6901 6961 7021 7081 7081 7141 7201 7201 7261 7261 7321 7321 7381 7381 7441 7441 7501 7501 7561 7561 7621 7681 7741 7621 7801 7801 7681 7861 7861 7921 7981 7921 Ωÿ qq QΥ g ΩŸ q ò g δŏ g g g qq δ Ω g g οy Ω ŏ qq δy δ Db δ g δ g Qγ qq g Q ŏ ŏ ŏ

| පි | 7981 | 804 | |
|----------------|--------------|---|--|
| . α | 8041 | CATGCATTACTGCATGCACTTCTTACAATACTATGAGATAGGTACTATTATCCCCAT 8100 | |
| 2y 2b | 8101 | TTCTTTTTAAATGAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC 8160 | |
| 7. 2. 2. | 8161 8161 | AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 8220 | |
| | 8221 | TAACATGGTGAAACCCCATCTCTAATAAAATACAAAAAATTAGCTGGGCGTGGTGGCAG 8280 | |
| Z G | 8281 | ACGCTGTAGTCCCAGCTACTCGGAAGGCTGAGGAAAAAGGCATGAACCCAGGAGG 8340 | |
| Sy do | 8341 | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACCTCCAGCCTAGGTGACAGTGAGA 8400 | |
| ςς G | 8401 | CTCCATCTCAAAAAAATAAAAATAAAATAAAAAATGAAAAAAAA | |
| Qy Dp | 8461 | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG 8520 | |
| oy gb | 8521 | TITGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | |
| Oy Ob | 8581 8581 | GGAAGGAGATGGCTCTTCTCTTGTCTCATTGTGTTTCTTCTGAGTGAG | |
| Oy Db | 8641 | GAAGGGGAACAGCAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC 8700 | |
| Oy Dp | 8701 | CCTGAAGGAAGCTCCTGGAATGTGACTCCCTTGCTCTGTTGCTCTTTTGGCATTCA 8760 | |
| Qy Dp | 8761 8761 | TTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 8820 | |
| Oy Dp | 8821 8821 | TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC 8880 | |
| Oy Dp | 8881 | CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG 8940 | |
| Qy Db | 8941 | GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA 9000 | |
| Qy Dp | 9001 | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA 9060 | |
| 영 | 9061 | | |

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61 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT 120
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881, LOCATION: 6040..6153, 7107..7147)
OTHER INFORMATION: /product="Hereditary Hemochromatosis OTHER INFORMATION: mutation"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LOCATION: replace(3872, "g")
COTHER INFORMATION: /phenotype= "Hereditary Hemochromatosis OTHER INFORMATION:
OTHER INFORMATION: /label= 24d2
US-08-834-497A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mutation"
/note= "Hereditary Hemochromatosis (HH)
gene 24d2 allele"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY:
LOCATION: 3852..3891
OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: genomic sequence surrounding variant OTHER INFORMATION: for 24d2(G) allele (SEQ ID NO:42)"
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note= "start and stop positions for
genomic sequence surrounding variant
for 24d1(G) allele (SEQ ID NO:20)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OTHER INFORMATION: /note= "start and stop positions OTHER INFORMATION: 24d2 allele cDNA (SEQ ID NO:11)"
                                                                                                                                                                                                                                                                         ATTORNEY AGENT INFORMATION:
NAME: Poissant, Brian M.
REGISTRATION NUMBER: 28,462
REFERENCE/DOCKET NUMBER: 8907-0056-999
TELECOMMUNICATION INFORMATION:
TELEPHONE: 650-493-4935
TELEFA: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
IENGTH: 10825 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0; Mismatches
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                                                                                                                    PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/632,673
FILING DATE: 16-APR-1996
CLASSIFICATION 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/630,912
FILING DATE: 04-APR-1996
CLASSIFICATION: 514
                          CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/652,265
FILING DATE: 23-MAY-1996
CLASSIFICATION: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: DNA (genomic) FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity 100.09
Matches 10823; Conservative
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NAME/KEY: -
LOCATION: 140..7319
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OTHER INFORMATION:
OTHER INFORMATION:
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OTHER INFORMATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY: CDS
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10261 TITTTCTGGCTTTATTCATAATTCTTAAGGTCAACTACATTGAAAAATCAAAGACCTG 10320
                                                                                                                                                                          GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGACATGCAG 10440
                                                                                                                                                                                                                                                     10501 ATCACTTGTAGAGAAAAGCCCCTGAAAATTTGAGAAAACAAGAAACTACTTACCAG 10560
                                                                                                                                                                                                                                                                                                                                                                                                          10561 CTATITGAATIGCIGGAATCACAGGCCATIGCTGAGCTGCCTGAACTGGGAACACAACAG 10620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10681 TGAGAGGTACAGGCCAAAATTCTTATGTTGTATAATAATAATGTCTTATAATAATGT 10740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTATITGAATIGCTGGAATCACAGGCCATIGCTGAGCTGCCTGAACTGGGAACACACACAG 10620
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGAGAGGTACAGGCCAAAATTCTTATGTTGTATTAATAATGTCATCTTATAATACTGT 10740
                                                                                                                                                        CATITIAAAITCITATICACCICTGGCAAAACCATICACAAACCATGGTAGTAAAGAGAA
                                                                            10261 ITTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HEREDITARY HEMOCHROMATOSIS GENE PRODUCTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC COMPATIBLE
COMPUTER: TBM PC COMPATIBLE
COMPUTER: Windows 95
SOFTWARE: FastSEQ for Windows Version 2.0b
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/834,497A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10801 TAAAATCCCCAAATTTTTCATAAAC 10825
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 5, Application US/08834497A
Patent No. 6140305
GENERAL INFORMATION:
APPLICANT: Drayna, Dennis T.
APPLICANT: Drayna, Dennis T.
APPLICANT: Feder, John N.
APPLICANT: Roday, David
APPLICANT: Ruddy, David
APPLICANT: Tsuchihashi, Zenta
APPLICANT: Tsuchihashi, Zenta
APPLICANT: Wolff, Roger K.
TITLE OF INVENTION: HEREDITARY HEMO
NUMBER OF SEQUENCES: 76
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STATE: New COUNTRY: USA 10036-2811
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|-----------|-----------------------------------|---|------------------------------|------------------------------------|----------|----------------------------------|-------------------|-----------------------------------|----------|---|---------------------------------------|----------|--|------------------------------|----------|---|---------------------------------------|--------------------|---|---|----------|--------------------------|-----------------------|------------------------------------|--|
| qq . | p d | Ογ Dp | Qy Dp | oy Op | ٥y | qq : | op 65 | Qy Dp | Qy | q | Oy Dp | ٥٨ | g q | O.Y | ìò | qa | Qy Dp | QY | qa , | Qy Dp | QY | Ор | οy | qq (| g S |
| | | - | | | | | | | | | | | | | | | | | | | | | | | |
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| 120 | 180 | 240 | 0 | 360 | 360 | 1 (1 | 480 | 4 | 540 | 600 | 099 | 099 | 720 | 780 | 780 | 840 | ō c | 096 | 9 | 02 | 0 | 1080 | 114 | 114 | 1200 |
| ACCCCT | TACCTT TACCTT | <u>a</u> – a | TCCCCG | 36GA | io F | GICCIG | GGGGTG | CTG | Ę | rgagggagtgc gagggagtgc | CCGGCTGT | GGCTGT | TGCTTT TGCTTT | GAACCTGG | - F | AAACAGG | CGCACGG | SCACE FGGGG | TGGGGA | TCTCTAGGGT | | TCTTT | 111111 | CTTTTCGG | STACTGA |
| CAACAACAC | TTCACAAGCAGG | TTTCACCAGG | GGAGCCATC | 3GP | CAGAGCT | GACCGCG | ceceecee | TGGA | ĭ | CGTGAGG | CTCCCC | CICCCCC | TCCCCCAACTAGAATG(| | | 8 = 8 | 일드 | | GAGTGGCGT | AGGTCTC | SAGGICIC | SCAATIGI | | MATTCTC | TACAAA |
| CCCCAAT | 77 — 77 | 5=5 | E - | F 25 - | GTGCGGC | ICTITICAGACCEC ICTITICAGACCEC | CTAGGGGC | PAACT | GCTAACT | TCCAGACCCCGTG | GCAGATAGGGGTCCCTCGCCCAGGACCTGCCCCTCCC | CTGCCCC | 110000F | | CTGGGG | GTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCT(| GAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGATC | CCACAGO CGAAAGA | CGAAAG | CTGAATTCTTCACCATTCCACCTTTTGGTGAGACCTGGGGTGGAGGT | regeere | ACTCTTGGCAATT | | | CTAGGCTTTATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA |
| | CACCTAGT | FCTGAAAGACCTGTTG | GTAGGGT | GTAGGGTGAC CGGGGACGTC | CGGGGGAC | 4 – 4 | GGGCGAACTE | GGAGTTI | GGAGTT | CCTACTTTCTGCGTC | CCAGGAC | CCAGGAC | CTCTGCGGAGTGACTTTGGAACGCCCCACTCCCTT(| AGCTAAGO | AGCTAAGO | 3TTTTTC | BAGCAAAC | SAGCAAA(| GGTTTCCACCTCAGAACGAATGCGTTGGCGGGGGGGGGG | FGAGACC: | TGAGACC | SGCCTTTCCCCAC | | GTTTGA | ATTAAGA(|
| TGCGAAG | CTGGATC | TTCTGAP | CCTAGGCAATAGCTGTAG | GCCAATAGCTGTAGG GGAGATTTAACGGGG | GATTTAP | CITCICCICCIC | GAGTCCGAGGGCTGCGG | GCGCTTGGC | GCGCTTC | CTACTT | CCTCGC | CCTCGC | AACCGCCC | FGAGCTG2 | GAGCTG | CTGTGCA(| SAAGGCTO | SAAGGCT. | reseces | CTTTTGG | CTTTTGG | | | CTGGAAAATTAAGTATATGTTAGTTTTGAACGTT | CTGTGTA |
| | TTAAAAACCAAGGGGGACACTGGAT | TAGGAGAGAGAGAACTAAAGTT TAGGAGAGAGAGAACTAAAGTT | CCTAGGC | CCTAGGC | AAGCGGA | 3 – 8 | AGTCCGP | SCTTTTTCTTTG | TCTT | TCTC TCTC TCTC | AGGGGTC | PAGGGGT | CTTTTGG | CTCACT | CTCACT | ATGTCAGO | FTGCCGAC | PTGCCGAC | AATGCGT | CCACCCA(| CACCCA | CTCCTGAGAGAGGCCTACCTCGGG | COLTACE PERMINANTA | ATGTTAG | CAATGTG |
| TCAGATC | AACCAAG AACCAAG | AGAGAGA | CTCCTGAG | ₹ <u>₹</u> | CCAAAAG | ACCAGGCCGG | SCTTGCTGCGTG | GAAACTAGCTT | CTAGCTI | GCAAGCCCC GCAAGCCCC | TGCAGAT | TGCAGAI | GAGTGAC | GTAGTTC | GTAGTT | ATTTCCA | GAGTGC | rGAGTGC: | AGAACG | CACCATTO | CACCATT | SAGAGAGG | SAGAGAG SAGAGAG | PARGTAT | FGATTTG |
| | ATTTAAA | GTAGGAG | GGGCATC | | 222222 | CCCGCGAGC | 6C6CTT6 | ATCGAAA | ATCGAAA | CCTATCCG(CCTATCCG(| CTGA | ACTGAAC | CICIGO | AAATCTC | AAATCTC | GGGTTT? | AAGTTCTTCCCTG | CTTCCCT | CCACCTC | ATTCTTC | ATTCTTC | GCTCCTC | | GAAAAT | CTTTAT |
| AATAT | TCAGGAT | 0-0 | T = | TTAC | | ATGGGCCCG | CAGGGGCGC | | | TCAAC TCAAC | CTAC | CTACC | 55555 1111 55555 | - | - | 1 AACTCGGG | | | | ₽- | ₽ | 1 GGGAGGC | 3 6 | 3=8 | _ |
| 61 | 121 | 181 | 241 | 241 | 301 | 361 | 421 | 481 | 481 | 541 | 601 | 601 | 661 | 721 | 721 | 781 | 84] | 841 | 901 | 961 | 961 | 102 | 1001 | 108. | . 1143 |
| qq | Oy Dp | Qy Db | δ | oy Oy | g : | G & | کې و | ογ | qq | Oy Dp | ογ | q | Oy Dp | ογ | qq | oy B | οy | 9 8 | q | ογ | g | S S | 9 8 | 6 6 | ογ |

AGGCTTTATTGATTTGCAATGTGCTGTGAATTAAGAGGCCTCTCTACAAAGTACTGA 1200 AACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA GTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG **VIGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA** NAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA NTAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG CTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT TTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT TAGCACAGTGTTCTGTGGGTCACGCCGGCCTCAGCACACACTTTGAGTTTTGGTA ACGIGIATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG AATTTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC ITGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAATTTCATGTTGAGCAG

| 2340 | 2400 | 2460 2460 | 2520 | 2580 | 2640 2640 | 2700 | 2760 | 2820 2820 | 2880 | 2940 | 3000 | 3060 | 3120 | 3180 | 3240 | 3300 | 3360 |
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| GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA | ACAGTGATCTGTCACAGGCTTTTAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | AAGGGACCAACACTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG | AGGTAGTGGAGTGGGCTGGGTAGGAACAGAAAAGGAGTGACAAACCATTGTCTCCTGAA | TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAGAGAGAG | CIGGGTGTAGTAGCTCATGCCAAGGAGGCCAAGGAGAGCAGATTCCTGAGCTCAGGA | GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTTACAAAAATACAAAATTA | GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTGAGGTA | TIGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC | CTAGGTCACAGAGCAAGACCCTGTCTCCCCTGACCCCCTGAAAAGAGAAGAGTTAAAGT | TGACTTTGTTCTTTATTTTAATTTTATTGCCTCAGCAGTGGGGTAATTGGCAATGCCAT | TTCTGAGATGGTGAAGGCAGAGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG | GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT | CAGTGTAAGAATTCAGGACCAAGGCTGGCACGGTGGCTCACTTCTGTAATCCCAGCACT | TIGGIGGCIGAGGCAGGIAGAICAITIGAGGICAGGAGIITGAGACAAGCIIGGCCAACA | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCGCACGCT | ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG | TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT |
| 2281 | 2341 | 2401 | 2461 | 2521 2521 | 2581 2581 | 2641 | 2701 | 2761 2761 | 2821 2821 | 2881 | 2941 | 3001 | 3061 | 3121 | 3181 | 3241 | 3301 |
| , Qy Db | Qy | Oy Dp | Qy Dp | Qy Dp | Qy Db | QY | QY | Qy | Qy Dp | Qy Db | Qy | Qy | QY | Qy | O _Y | Oy . | Qy Db |

3540 3840 3720 3780 3840 4080 4140 4200 4260 4260 4500 CTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG ACCCAGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA CCAGACACACTGATGGTATGAGTTGATGCAGGTGTGTGGAGCCTCAACATCCTGCTCCC CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGGAGCCCCGAAC TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCCTGCAGCTGAGTCAGAGTCTGAA AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG CAAGGGTATGTGGAGAGGGGCCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 4441 CTGGAGAGGGACTGCCCTGCACAGCTGCAGCAGTTGCTGGAGGGGGAGAGGTGTTTTG **ATTITCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT** CTGGGGGCAGTGAGGGGGTGGCCACGTGTGGCAGAGAAAAGCACACAAAGGAAAGAGC TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCTG GGCTGTGAAATGCAAGAAGACAACAGTACCGAGGGCTACTGGAAGTACGGGTATGATGGG TGCCCCACCAAGCTGGAAAAGGCACAAAATTCGGGCCAGGCAAGAACAGGGCCTAC CAGGACCACCTTGAATTCTGCCCTGACACTGGATTGGAGAGCAGCAGAACCCAGGGCC 3361 3481 3541 3601 3781 3841 3361 3421 3421 3481 3541 3601 3661 3661 3721 3721 3781 3841 3901 3901 3961 3961 4021 4021 4081 4081 4141 4141 4201 4381 4201 4321 4321 4261 4261 4381 qq g g qq pp QQ qq Qγ Qγ g οy δ Qγ Ω δy QΥ qq QY Q g Qλ Οy δ ò g οχ qq δ g Q a à g Qγ 9 ò

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| GETTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC CCAAATTCTGGGAAGGACTTTCTCAATCCTAGAGTCTTATAATTGAGATGTA |
| GTGTCTATGGCCCTTGCTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGT [1] |
| AGGCCGAGGCGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA |
| GCTAATTGGAAGGCTGAGGAGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA |
| AAAAAAAAAAAAAAAAAAAAAGAGAATTCAGAGATCTCAGCTATCATATGAATACCAGGACAAA |
| AGAACATAGCAATAATCACTGAAGCTATCTTACAAGTCCGGTTCTTATAACAATG |
| SGCAA SGCAA SGCAA SAGAA |
| ACCADATECTOR CONTROLLE ACTION CONTROLLE |
| AÀCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC |

6480 5580 5700 5700 5760 5760 5880 5880 5940 0009 6000 0909 0909 6120 6120 6180 6180 6240 6240 6300 6300 6360 6360 6420 6420 6480 6540 6540 9600 0099 0999 CAGAGATATACGTNCCAGGTGGAGCACCAGGCCTGGATCAGCCCCTCATTGTGATCTGG **ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG** TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCCAGAGGGGGATCTGGCATCCATGGG AAGCATTTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAGAAAT TITICCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAAAGAAG TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCCAGAACATCACCATG AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG GTGGCAATCAAAGGCTTTAACTTGCTTTTTTCTGTTTTAGAGCCCTCACCGTCTGGCACCC AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC CTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG GIGGCAATCAAAGGCTTTAACTTGCTTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC TGTTCATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 5641 5641 5821 5821 5881 5941 6001 6061 6061 6121 6121 6181 6181 6241 6301 6361 6481 6541 6541 6601 6601 5521 5581 5581 5701 5701 5761 5761 5881 5941 6001 6241 6301 6361 6421 6421 6481 Dp QQ Db qq Q g Вb QQ δy qq qq δλ g Qγ Db g g qq Db OD qq δŻ Dp ò δy δy οy Qγ Οy δ οy δý ÓΥ οy δý οy òγ

| GRENTRAGGGGARCTGGGGAGATTAGAATTACTGTACCTGAGCCTGGGGGAATTACTGTAGGGGAATTACGGGGAATTACGGGGAATTACGGGGAATTACGGGGGAATTACGGGGGAATTACGGGGGGGG | NATAGGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGGGGCATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGGGATTAGGAATTAGAAATAATTACTGTACCTTAACCCTGAGGGGATAACCCTGAGGGGATAACTGGGTATAGGATTAGGATTTCTAACCCCTGAAACTTTGGGATATTGGGATATTGGGATATTGGGATATTGGGATATTGGGATATTGGACCCCCCTGAAACACTCTGGGGTATTGGGATATTGGGATATTGGAAAAAACAACCCAAGGGTCATTGGGATATTGGGATATTGGGATATTGGGATATTGGAAAAAA |
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| TRIANGGCATACTGGGAGATTAGAAATAAT TATAAGGCATACTGGGAGATTAGAAATAAT TATAAGGCATACTGGGAGATTAGAAATAAT TATAAGGCATACTGGGAGATTAGAAATAAT TATAAGGCATACTGGGAGATTACAACCCC TCAGAAAGAAGCCAGTTTCTACCCCC TCAGAAAGAAGCCAGTTTCTTACCCCCCCCCC | 661 GAGTATAAGGCATACTGGGAGATTAGAAATAAT |
| | 661 GAGTATAAGGG 661 GAGTATAAGGG [1111111111111111111111111111111111 |
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8460 8580 8640 8700 8700 8040 8100 8160 8220 8280 8280 8340 8400 8400 8460 GAAGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC 8821 TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGTATTTC CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTTTGCTTTTGCATTCA TITCITIGGACCCTACGCAAGGACTGTAATIGGTGGGGACAGCTAGIGGCCCTGCTGGGC GAAGGGGAACAGCAGAAAAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC TAACATGGTGAAACCCCATCTCTAATAAAATACAAAAATTAGCTGGGCGTGGTGGCAG CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA GCACCTGTCCCAGAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGGTGTTTTTAGC CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT TTCTTTTTAAATGAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC 8161 8761 7861 7921 8041 8161 8221 8281 8281 8341 8401 8401 8461 8461 8521 8521 8581 8581 8641 8641 8701 8761 7801 7981 7981 8041 8221 8341 8701 7861 7921 8101 7741 7801 Db qq οy qq qq QΥ gg Qγ qq δλ Ωp δy QQ Dp οy δ Ω Dρ δλ g QΥ Q Qλ οy QQ δ Ω ΩŽ Db δ g QΫ QQ δλ Dp òγ

| , qa | 0y 9 | Db 9 | Oy 101 | | 27 10. Db 10. | Qy 10: | Db 10: | QY 10; | | Oy 10: Db 10: | Qy 103 | Db 103 | Qy 103 | Db 103 | Oy 104 | | | 10.10 | | | CY 106 | | | y 107 | Db 107 | y 108 | DD 108 | RESULT US-08-8 | Paten GENE AP | AP AP AP |
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| 0880 | 3 | 94 | 0 | 000 | 090 | > r | 9120 | 9180 | 9180 | 9240 | 9240 | 9300 | 0000 | 9360 | 420 | 420 | 480 | 480 | 540 | 540 | 0096 | 0096 | 9660 | 9720 | 9720 | 9780 | 780 | 9840 9840 | 0066 | 096 |
| | | | AAA 9 | AAA 9 | | | AT | | | | o (| | | | TTG 94 | rrc 94 | rat 94 | rAT 94 | F - | -E- | F-1 — | F | თ თ ი — ი | <u>م</u> | - A | () | — r) | | E E | JAC 99 |
| | 44774 | ACCAA | TTAAA | TTAAA | CATGT | TO TWO | GGCAT GGCAT | GCCTC | GCCTC | TTAGT | TTAGT | | | CCGTC | TGCAC | TGCAC | TACCA | TACCA | CICIT | CICII | rgrgA' | rgrga | TTAGC | AAAAT | AAAAT | CTTG | CTTG | CTAAT | ATCGTO | AGCA. |
| | | AAGCC | GCACA | GCACA | TTCAC | | GCAAT | TCTCA | TCTCA | TATT | TATT | | 5000 | CCCAG | CTACA | CTACA | CAGGA | CAGGA | CTCAT | CTCAT | GTAAA | STAAA | TTTAA: | CATTA | CATTA | SAAGT | SAAGT | FIGCT: | AATTAA | FTTACC |
| | STAK | AATGG | CCGGT | CCGGT | ATCAG | | GGAGT | TCCTG | TCCTG | TTTTG | TTTTG | | | CCCTG | TGTTA | TGTTA | TGCTT | TGCTT | GATAT | GATAT | AAAAA(| AAAAA | TGTTA' TGTTA' | rgttg | IIIII | rtatt(| FTATT | TTATT TATT | AGCCG2 | STTAT |
| SAGTCZ | GGTAT | GGTAT | TLESSE | GGGTT | GGGAA | | AGGCI | GATTC | GATTC | CTAAT | CTAAT | | AGGGA | AGCCA | CTTTA | CTTTA | GCAGG | GCAGG | GCAAA | GCAAA | GTAGA | GTAGA | AAAGC AAAGC | ATTAT | ATTAT | TGATT | TGATT | GACAT GACAT | GTGGT, GTGGT, | CATTG |
| TCTGG | GAGAT | GAGAT | CACTE | CACTO | SATICI | | 110000 | CAAGO | CAAGG | 1111 | 99000 | TCGAA | GTGTG | GTGTG | GTTTA | GTTTA | GAAGG | GAAGG | TTTTA | TTTA | GTTAT | GTTAT | CAATT | TTAGT | TTAGT | CTGCA | CTGCA | TTGGA TTGGA | CAACT | TAAGA(|
| AGTGC(| CATTT | CATTE | TGGAG | TGGAGG | IGCTAC | | CTCTA | CAGGTI | CAGGT | ACCATO | ACCATO | | TACAC | TACAG | SCATG | SCATG | GTCTT | GICT | ATTAAA | TTAA | GAAAA | AGAAAA | GAATA | ACCTG | ACCTG | GTATA | GTATA | TCATT | TCATT | AGTTG |
| AGGCC | TCTCT | TCTCT(| TTCCA | TTCCA | GGAAT | TURDO | I I I I I I | CTCC | | SCACC | SCACC | | rgagar | | AGATGO | AGATG | CATTC | SATTC | PAGGCA | PAGGCA | FGGTT? | GGTT | FAAAAT | CTATI | CTAT | GTATI | GTAT | CTTTG | TATT | GTCTA |
| TCCCT | TAAGC | TAAGC | GGTCC | GGTCC | ATTCA | | TTTT | CTCTG | CTCTG | GGCGT | | 31166 | AGTGC | AGTGC | FATCC! | ratcc, | ACAAG(| ACAAGO | FTCTT | TICTI | TTTG | rtttgi | AGCTA1 | ACTTG1 | ACTTG | PATAT | ATAT | AATCG | CGGAA | TTGTC |
| TGTCC | TGGAG | TGGAG | GCCCA | GCCCA | AGGAC. | | TTTT | GTAAC | GTAAC | TTACA | TACA | ACCATO | CCCAA | CCCAA | ATATA' | ATATA | STGGT/ | STGGT | STTTC | STITC | CTTT | CTTT | NGAAAI NGAAAI | PAACA | PACA | AAATGI | NAATG | TACTI | TCTTA | GGACA |
| CACGG | TGAAG | TGAAG | AGGAT | AGGAT | TAACC | | TCTTT | TCACT | TCACT | TGGGA | TGGGA | | GCCT | GCCT | TTAAT | TAAT | FAAAT(| TAAAT | CAGAA | CAGAA | CATTT | CATTT | ATTGT/ ATTGT/ | ACTAT | ACTAT | TAAT! | TAAT | GTATZ | VITITO | TCTAG |
| | CTCAA | | GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA | CTTAG | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA AAAATCTAACCACGAATTGAATT | AAGAG | | TCGGC | | AGTAGCTGGGATTACAGGCGTGCACCACCATGCCGGCTAATTTTGTATTTTAGTAGA | CTAGG | AND | GCCTC | | AGAGTCTTAATATATATCCAGATGGCATGTGTTTACTTATGTTACTACATGCACTT | GAGTC | CTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT | CTGCA | ACAGCTCAGAAGTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTCTTCT | CAGCT | TTAAACCATTTTTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGGTAAATGTGAATTTTTT | TAAAC | AGGGTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCA | GAAAA | | ATACT | | ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGT | TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC |
| | 8881 C | | ~ | 8941 G | 9001 A | | | 9121 C | 9121 C | | 9181 | 241 | 301 | 301 | 9361 A | 9361 À | 9421 G | 9421 Ġ | _ | 9481 A | 541 | | 9601 A | 9661 T | 9661 T | 9721 T | 9721 T | 9781 A' 9781 A' | 9841 C | 9901 T |
| QQ | ò | | | a a | do do | | | λo | a Q | | | _ | | | , 70 | op Q | γo | | | ි අධ | - | | y de | 6 VQ | | oy 9 | op 3 | 0y 9 | 6 40 | oy , 9 |
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10140 10200 10260 10080 10200 10080 10140 10320 CATITIAAATICITATICACCICIGGCAAAACCATICACAAACCATGGTAAAGAGAA 10380 10800 10500 CTATITIGAATIGCIGGAATCACAGGCCATIGCIGAGCIGCCIGAACIGGGAACACAACAG 10620 AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680 10680 9901 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC 9960 9961 CATTCTGAAAGCATATGACAAATTATTTCTCTCTTAATATCTTACTATACTGAAAGCAGA CTGCTATAAGGCTTCACTTACTCTTCTACCTCATAAGGAATATGTTACAATTTAATT TTTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTGAAAAATCAAAGACCTG CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT GITAATTITITAATAGAAATTITAAGICCICCATTITICITITGGGIGITITITAAGCITAA CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA CAGTATTTTATAAAACATTCTTCACAAACTCACACACATTTAAAAACAAAACACTGTCTC 1801 TAAAATCCCCAAATTTTTCATAAAC 10825 0021 0201 0201 0261 321 0381 381 0441 501 1990)621 0621 0141 0741 801

RESULT 8
US-08-834-497A-7
Sequence 7, Application US/08834497A
Patent No. 6140305
GENERAL INFORMATION:
APPLICANT: Thomas, Winston J.
APPLICANT: Drayna, Dennis T.
APPLICANT: Feder, John N.
APPLICANT: Feder, John N.
APPLICANT: Ruddy, David

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881, LOCATION: 6040..6153, 7107..7147)

OTHER INFORMATION: /product= "Hereditary Hemochromatosis OTHER INFORMATION: and 24d2 mutations"

OTHER INFORMATION: /note= "Hereditary Hemochromatosis OTHER INFORMATION: gene containing a combination of both OTHER INFORMATION: 24d1 and 24d2 alleles"
APPLICANT: Tsuchihashi, Zenta
APPLICANT: wolff, Roger K.
TITLE OF INVENTION: HEREDITARY HEMOCHROMATOSIS GENE PRODUCTS
NUMBER OF SEQUENCES: 76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "Hereditary Hemochromatosis (HH)
gene containing a combination of both
24d1 and 24d2 alleles"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note= "start and stop positions for CDNA containing a combination of both 24d1 and 24d2 alleles (SEQ ID No:12)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: genomic sequence surrounding variant OTHER INFORMATION: for 24d2(G) allele (SEQ ID NO:42)"
                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC Compatible
COMPUTER: SYSTEM: Windows 95
SOFTWARE: Fast-SEQ for Windows Version 2.0b
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8907-0056-999
                                                                                            ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
STATE: New York
CUUNTRY: USA
ZIP: 10036-2811
                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US/08/834,497A
FILING DATE: 04-APR-1997
                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/652,265
FILING DATE: 23-MAY-1996
CLASSIFICATION: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/630,912
FILING DATE: 04-APR-1996
CLASSIFICATION: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/632,673
FILING DATE: 16-APR-1996
CLASSIFICATION: 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTORNEY AGENT INFORMATION:
NAME: POISSANT, Brian M.
REGISTRATION NUMBER: 28,462
REFERENCE/DOCKET NUMBER: 8907
TELECOMMUNICATION INFORMATION:
TELEFAX: 650-493-4935
TELEFAX: 650-493-4935
TELEFAX: 650-493-656
TELEFAX: 65141 PENNIE
INFORMATION FOR SEQ ID NO: 7:
SEQUENCE CHARACTERISTICS:
LENGTH: 10825 base pairs
TYPE: nucleic acid
STRANDENESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURE:
NAME/KEY:
LOCATION: 140..7319
OTHER INFORMATION: CD
OTHER INFORMATION: CD
OTHER INFORMATION: CD
OTHER INFORMATION: CD
                                                                           CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3852..3891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5507..6023
                                                                                                                                                                                                                                                                                                                                                   FILING DATE: 04 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY:
LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY:
LOCATION:
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Gaps
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 TCTAAGGTTGAGATAAAATTTTTAAATGTATGAATTGAAATTTTGAAAATCATAAATATTTA
                                                                                                                                                                                                                                                                                                                                                                                     61 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACACCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                121 TCAGGATTTAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTGCTGTAGGAGAGAGAACTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301 TTTCCCCGCCCCCCAAAAGAAGGGGAGATTTAACGGGGACGTGCGGCCAGAGCTGGGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361 ATGGGCCCGCGAGCCAGGCCGGCGCTTCTCCTCCTGATGCTTTTGCAGACCGCGGTCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAAAAATCGAAACTAGCTTTTTCTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      601 CTACCACTGAACTGCAGATAGGGGTCCCTCGCCCCAGGACCTGCCCCCTCCCCCGGGCTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       661 CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        721 TAAATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAAGCCTGGGGCTCCTTGAACCTGG
                                                                                                                                                                                                                                                                                                  ;
                                                                                                                                                                                                                                                                      Length 10825;
                                                                        3872, "g")
/Phenotype= "Hereditary Hemochromatosis
                                                                                                                                                                              /phenotype= "Hereditary Hemochromatosis
   /note= "start and stop positions for genomic sequence surrounding variant for 24dl(A) allele (SEQ ID NO:21)"
                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                      DB 3;
                                                                                                                                                                                                                                                                                                  7
                                                                                                                                                                                                                                                                   Score 10823;
Pred. No. 0;
0; Mismatches
                                                                                                                     /label= 24d2
                                                                                                                                                                                                          /label= 24d1
                                                                                                                                          : CTHER INFORMATION: /phenotype: OTHER INFORMATION: /phenotype: OTHER INFORMATION: /label= ''.'
                                                                                                                                                                                                                                                                    100.0%;
100.0%;
OTHER INFORMATION: /note-
OTHER INFORMATION: genomic
OTHER INFORMATION: for 24c
FEATURE: ANAMEKEY: allele
LOCATION: replace(3872, "g
OTHER INFORMATION: /phenot
OTHER INFORMATION: /Thenot
OTHER INFORMATION: /label-
FEATURE:
                                                                                                                                                                                                                                                                                               Matches 10823; Conservative
                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
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| ACAGG 840 ACAGG 840 | CACGG 900 | GGGGA 960 GGGGA 960 | TAGGGT 1020 TAGGGT 1020 | CTTTT 108 | TTTCGG 1140 TTTCGG 1140 | TACTGA 1200 TACTGA 1200 | ATTTGA 1260 ATTTGA 1260 | TTAACT 1320 TTAACT 1320 | TTTCTG 1380 TTTCTG 1380 | CTGTAG 1440 CTGTAG 1440 | TTGGTA 1500 TTGGTA 1500 | rccrgg 1560 ccrgg 1560 | CATAGC 1620 CATAGC 1620 | sagcag 1680 sagcag 1680 | AAGCCC 1740 AAGCCC 1740 | GGGAGA 1800 GGGAGA 1800 | TTGTGA 1860 TTGTGA 1860 |
|---|----------------------|-----------------------------------|---------------------------------------|----------------------|---|---------------------------------------|--|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---|--|---|--|--|
| CCCCAGTCATCTCCAAA(| CCCACAGCAGGATCCG | GCGAAAGAGTGGCGTT | SGGTGGAGGTCTC | ACTCTTGGCAATTGTT | CTGAACAATTCTCT | GGCCTCTCTACAAAG; | CCATATCTGATCTT. | TTATTTACTAGAAG; TTATTTTACTAGAAG; | AACATAAATAATCTGGT: | GACAGTGATTTTGCC(| ACAGCACTTTGAGTT" | ATGGCACGGCCTGCTT | CTCATGTCTCCACTT | AATAAAATTTCATGTT | STGTTGCACTGTTC | ATTTGCATTCTAGT | aggaaatcatgggtg |
| GCTGTGCAGTTTTTTC | AGAAGGCTGAGCAAAC | TTGGGCGGTGGGGGCC | ACTTTGGTGAGACCT | CTCGGGCCTTTCCCC/ | GTTTTGAACGTTTGAA(| GCTGTGTAATTAAGA(| CACTTCTAAGTTACAT' | GAGCTAATAATACGT: | TCAGGTTACAAAGAA(| CTTCTAATCTTAGTT(| CACGCCGGCCTCAGC | gacaagaatgaggc | GCTTTGGTGGCAGAG | CATTAGAGGTTGAATA | AAATGAGTCCCAGCCAT(| TCTTTACCCTTTGAT TCTTTACCCTTTGAT | AAAGATATACAACATCI AAAGATATACAACATC |
| ratitccaaigica | CCTGAGTGCTTGCCGF | CTCAGAACGAATGCG1 | TTCACCATTCCACCC | CTGAGAGAGCCTACC | TTAAGTATATGİTA | ATTGATTTGCAATGT | STAAGCAATGCACT | SCATAGGGAGGTAG | ATTATATAACTCTTT | CAAGTACTACAGCTG | AGTGTTCTGTGGGTCA(| TCCACATTTTACACAT | TCAATGGTACACTGG TCAATGGTACACTGG | FAAACATCACACTG | [G] = [G] | GAGCAGGGAAACAAG | SCAAATGAGCAG |
| AACTCGGGTT' AACTCGGGTT' | AAGTTCTTCC | GGTTTCCACC | TCTGAATTCT | GGGAGGCTCC | GCCTGGAAAA1 GCCTGGAAAA1 | CTAGGCTTTA | TAATGAACAT(TAATGAACAT(| TTTCACTAG | GGAATTCAG GGAATTCAG | ATGTTATTT ATGTTATTT | TGTAGCAC TGTAGCAC | CTACGTGTA | CAAATTTAT CAAATTTAT | TATGATTCT | AAATATTC | CAAGGGAGAGA | 1 GATGACAATAAC |
| 781 | 841 | 901 | 961 | 1021 | 1081 | 1141 | 1201 | 1261 | 1321 | 1381 | 1441 | 1501 | 1561 1561 | 1621 | 1681 | 1741 | 1801 |
| Qy Dp | Oy Dp | Qy Db | oy Dp | Oy Db | Qy Dp | Qy Dp | Oy Dp | Oy Dp | Qy Db | Qy | Qy Dp | Qy Db | Qy Dp | Oy Db | Qy Db | Qy Dp | S G |

2820 2640 2700 2700 2760 2760 2880 2880 2460 1980 2040 2100 2100 2160 2160 2220 2220 2280 2280 2340 2400 2400 2460 2580 TICTGAGATGGTGAAGGCAGAGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG 3000 GCTGGGTGTGGTGCATCCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTA TGACTITIGITCITIATITIAATITITATITGGCCTGAGCAGTGGGGGTAATITGGCAATGCCAT AGGTAGTGGAGTGGGCTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA TATATICIGAAGGAAGTIGCIGAAGGATICIAIGTIGIGIGAGAAAAGAAGAATIGG GTTCAAGACCAGCCTGGGCAACACAGCAAAAACCCCTTCTACAAAAAATACAAAAATTA TIGCITGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCCAGTCTTGACAACCAAAAATGTCTCT AATAAACAAGTAGTGGGGGGGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA 2881 2641 2761 2821 2881 2941 2041 2101 2161 2221 2281 2281 2341 2341 2401 2461 2461 2521 2521 2581 2581 2641 2701 2701 2761 2821 1861 1861 1921 1921 1981 1981 2041 2101 2161 2221 2401 q Dp Ωp Ω Op δy g Οy g ΟŻ g Qγ QQ Qy В QΥ g Óγ Dp Ω g Q g δ P В οy Op οy Ω Ω ٥y ò g δŽ οy

| 3000 3060 3060 3120 3120 3180 | 3240 3300 3360 3360 3420 | 48 48 54 60 | 3660 3660 3720 3720 3780 | 84 84 90 | 3960 3960 4020 4020 4080 |
|--|---|--|--|--|--|
| | TGGTGAAACCCCATGTCTACTAAAATACAAAATTAGCCTGGTGGGGGCGCCCCTTGAACCCGGCTTTTTCAGGAGGTTTAGCCTTGGTGGTGGTGGCGCCCCTTTTTTTT | TI DA PA | ACCCAGGACTGTCATATGGAAGAACAGGACTGCAACTCACCCTTCACAAAATGAGGA [| CTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGG | TCCATGGGTTTCCAATAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCTGAA IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII |
| 41 01 01 61 61 21 21 | 3241 <i>b</i> 3241 <i>b</i> 3241 <i>b</i> 3241 <i>b</i> 3301 1 3361 <i>c</i> 3661 | 3421 7 3421 7 3481 7 3481 7 3541 0 | 3601 A 3601 B 3661 C 3661 C 3721 C | 781 781 841 841 | 3901 T 3901 T 3961 A 3961 A 4021 C |
| . 000 000 000 000 000 000 000 000 000 0 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 24 CA CA CA CA | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | oy oy | oy oy |

4140 4320 4320 4380 4500 4560 4560 4620 4680 4800 4860 5040 5100 CAAGGGTATGTGGAGAGGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 4080 5160 5160 GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAA **ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGGAAGAGGGAAG** GAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT GGCTGTGAAATGCAAGAAGACAGTACCGAGGGCTACTGGAAGTACGGGTATGATGG TGGCCCACCAAGCTGGAAAAGGCACAAAATTCGGGCCAGGCAGAACAGGGCCTAC CTGGAGAGGGACTGCCCTGCACAGCTGCAGCTTGCTGGAGCTGGGGAGAGGTGTTTTG GACCAACAAGGTATGGTGGAAACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG AGGTTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAGGGAA GTGTCTATGGCCCTTGCTTTTTATTTAACCAATAATCTTTTGTATATTATACCTGTTAA AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCCAGCACTTTGGG AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA ACCCGTCTCTAAAAAAAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAAA TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG 4141 4261 4381 4621 4681 4861 4021 4081 4081 4141 4201 4321 4321 4381 4441 4441 4501 4501 4561 4681 4741 4741 4801 4801 4861 4921 4921 5041 4201 4261 4561 4621 4981 4981 5041 δ g ŏ qq QΥ g QΥ q δy qq QY g Qγ qq οy g δy g δy ΩD Qγ q Q_{λ} g δ g ŏ pp ΩŽ g ò g δy g ò QQ

| 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 | ō ō | 0 0 | 0 0 | 0 0 | 0 0 | 0, 0, | 09 | 20 | 80 | 40 |
|---|--|---|---|--|---|--|--|---|--|---|--|--|---|---|--|---|--|
| 522 | 528 528 | 534 534 | 540 540 | 546 546 | 552 552 | 558 558 | 564 564 | 570 570 | 576 576 | 582 582 | 588 588 | 594 594 | 600 | 60 | 612 | 618 | 62 |
| ATATCAAGTGAGGCCACTTATCAGAGTAGAATCCTTTAGGTTAAAAGTTTCTTTC | AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC | CTCCTAGGTTGACCCAGGTGAACTGACCATCTGTATTCAATCATTTTCAATGCACATAA | AGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACAGATATGTATATTTACATGT | AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTTCTGAAAAGGGTATTTCCTTCC | AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC | CTCATCCTTCCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACATCATGTGACC | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACCCCCAGAACATCACCATG | AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG | CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG | CAGAGATATACGTNCCAGGTGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGATCTGG | GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGTTGAGAGGAGTGCC | TGAGGAGGTAATTATGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG | GTGGCAATCAAAGGCTTTAACTTGCTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC | TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT | TGTTCATAATATTAAGGAAGGGGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT | TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGGG |
| 5161 | 5221 5221 | 5281 5281 | 5341 5341 | 5401 5401 | 5461 5461 | 5521 5521 | 5581 5581 | 5641 5641 | 5701 5701 | 5761 5761 | 5821 5821 | 5881 5881 | 5941 | 6001 | 6061 6061 | 6121 6121 | 6181 |
| Qy Db | Qy Dp | Qy Dp | Oy Dp | Oy Dp | Oy Dp | Oy Dp | Qy Db | Qy Db | Qy | Qy Db | Oy Dp | Oy Dp | O. | S G | Qy Db | Qy Db | Oy Ob |

6480 6300 6420 6420 6480 6540 6540 0099 0099 0999 0999 6720 6720 6780 6780 6840 6840 0069 0969 7020 7080 7080 7140 7140 7321 TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG 7380 TGAGTGACACGCGCGCGTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA GCCTGACGAACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAGATTTCCCCAT TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATATGGTG CTTTCCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGGGGCACTACGTCTTAGCTGAACG GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGGATATTGGGTTATGA AATGTGTTGTTAAGAAGTTAGATGAGGGGGGGGGGGGCCAGTTAGAAAGCCAATAAGCAT GTGAATGAGGAAAATAAGGAAGAGAGAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCTGAGTTTGCGT AGCIATCACTCACCAATTATGCATTTCTACCCCTGAACATCTGTGTGTAGGGAAAAGA 6481 6541 6541 6601 6841 6841 6901 6901 6961 6961 7021 7081 7141 7141 7201 7261 6241 6241 6301 6361 6361 6421 6421 6481 6601 6661 6661 6721 6721 6781 6781 7021 7081 7201 7261 6301 g g Dp g Q οg δy g δy pp g δy QC Ωÿ g δy a δλ Db ò q QΥ QQ Ωý QQ ŏ g δ g ŏ δy Óγ QΥ οy ΟŸ ۵y

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 $\mathbf{T}\mathbf{p}\mathbf{u}$

| 131 | | 401 CTC | 401 TAC | 521 T 521 T | 8581 GGAAGGA 8581 GGAAGGA | 541 GAAGGG | 8641 GAAGGGG | 7 - 0 | 8761 TTTCTTT 8761 TTTCTTT | 8821 TTCACAC 8821 TTCACAC | 8881 CCTCAAT | -0 | 8941 GCTTAGA 8941 GCTTAGA | 9001 AAAATCT 9001 AAAATCT | 9061 AAAGAGT | | 9121 CTCGGCT 9121 CTCGGCT | 9181 AGTAGCT 9181 AGTAGCT | 9241 GACAGGG 9241 GACAGGG | | 301 1 | 9361 AGAGTCT | 105 | 9421 GCTGCAT 9421 GCTGCAT | 9481 ACAGCTC | 9481 ACAGCTC |
|-----|---|---------|---|---|--|--|--------------|--|---|--|--|---|--|--|---|--|--|--|--|--|--|--|--|---|--|--------------|
| | | qa - | A G | Qy Db | Oy Db | QY | qa o | | Qy | QY | Qy | qα | QY | da bb | O S | an o | do do | QQ QQ | QY | δŏ | đ | ò i | ag :: | A G | Qy | qu |
| | • | | 1 TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACTCAGAG 744 | ACATACACCTATGTCATTTCATTTCCTATTTTGGAAGAGCTCCTTAAATTTGGGGGA 750 | CITACATCATTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT 75 | CITACATUCATITATACATCICAGAAAACCITIGAACCCCGGGACGTGGCGTACTAT / 3 AACCTTACCAGATTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT 76 | | TIGAATCCTCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC 768 | CATCTGATTGTGATGTGGACGCTATGAAGGCTGTACACTGCACGAATGGAAGG 774 | GCACCTGTCCCAGAAAAAGCATCATGCCTATCTGTGGGTAGTAGTGGTGGTTTTTAGC 780 | GCACCTGTCCCAGAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGGTGTTTTTAGC 78 | AGGTAGGAGGCARATATCTTGARAGGGGTTGTGARGAGGTGTTTTTTTATTGGCATGA 78 | AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT 792 | TCCAGACCTGAAGAATCACAATATTTCTACCTGGTCTCTCTGTTCTGATAATGAAA 798 | rccagaccrgaagaarcacaaraarrittcraccrggrcrccrrgrrcrgaraargaaa 798 attargaraaggarcaaaaaggactracrrcgrgrccaccrrcrrgaggaccracrr 804 | ATTATGATAAGGATGATAAAAGGACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA 804 | CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT 810 | TTCTTTTTAAATGAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC 81 {{ | AGCACTTIGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 822 | AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 822 | TAACATGGGGAAACCCCATGTCTAATAAATACAAAAATTAGGGGGGGG | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAAAATGGCATGAACCCAGGAGG 834 | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG 834 | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGGTGAGA 840 | CTCCATCTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | |
| | | 73 | 73 | 7 | 7 , | | 7 | <i>r r</i> | | | , , | | , , | | | 7 | | | | | | | | 8 8 | 80 | ı |

GECCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA TTAATATATATATCCAGATGCCATGTGTTTACTTTATGTTACTACATGCACTTG TGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG **ATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG** GGAAGGTCCTGGAATGTGACTCCCTTGCTCTCTGTTGCTCTTTTGGCATTCA TGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC CACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC TAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA TCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA GGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA CAGAAGTITCTICTTAAGCATTAAATTTTAGCAAAGATATCTCATCTTCTT

| OY 10621 AAGGAAACCAACCACTCGATAATCATGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680 10621 AAGGAAAACCAACCACTCTGATAATCATGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680 10681 TGAGAGCTACACCACTCTGATAATCATAATAATAATAATAATAATAATAATAATAATAA | 4 22 S | APPLICANT: Gnireas APPLICANT: Ruddy, David APPLICANT: Tsuchihashi, Zenta APPLICANT: Tsuchihashi, Zenta APPLICANT: Wolff, Roger K. TITLE OF INVENTION: Hereditary Hemochromatosis Gene NUMBER OF SEQUENCES: 44 CORRESPONDENCE ADDRESS: ADDRESSEE: Pennie & Edmonds LLP STREET: 1155 Avenue of the Americas CITY: New York New York | FORM: oppy disk c compatible c windows 95 erfect Version N DATA: reb-2000 | ## APPLICATION NUMBER: 08/652,265 FILING DATE: 23-May-1996 #PRIOR APPLICATION NUMBER: 08/632,673 #PRIOR APPLICATION NUMBER: 08/632,673 FILING DATE: 16-Apr-1996 ### PRIOR APPLICATION NUMBER: 08/630,912 ### PRIOR APPLICATION NUMBER: 08/630,912 ### PRIOR APPLICATION NUMBER: 28,462 ### REGISTRATION NUMBER: 21,2-999 ### TELEPHONE: 212-790-9990 ### TELEPHONE: 212-790-9990 | TELEX: 06.44 TELEX: 06.44 SEQUENCE CHARACTERISTICS: ENGTH: 10425 base pairs TYPE: nucleic acid STRANDEDNESS: single TOPOLGGY: linear MOLECULE TYPE: DNA (genomic) FEATURE: NAME/KEY: CDS |
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| OY 9541 TTAAACCATTTCTTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGTAAATGTGATTT 9600 DD 9541 TTAAACCATTTTTTTTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAGTAAATGTGATTT 9600 OY 9601 ACGCTCATTGTAGAAAAGCTATAAAAGTTAAAAGTTAATTAA | 9781 ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | OY 9901 TCTTCACTTTAGGGACATTGGTCAAGTTGGTAAGATTTTTACCAGCAAAC 9960 Db 9901 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTTATTGGTTATTTTACCAGCAAAC 9960 Db 9901 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTTAATTGTTTATTACCAGCAAAC 9960 OY 9961 CATTCTGAAAGCATATGACAAATTATTCTCTCTTAATATCTTACTATACTGAAAGCAGA 10020 OY 10021 CATTCTGAAAGCATATGACAAATTATTCTCTCTTAATATCTTACTATACTGAAAGCAGA 10020 OY 10021 CTGCTATAAGGCTTCACTTCTACTCTTATAATATCTTACAATTAATT | 10081 AGGTAAGCATTTGTTTATATTGGTTTTATTTCACCTGGGCTGAGATTCAAGAACACC 10081 AGGTAAGCATTTGTTTATATTGGTTTATTTCACCTGGGCTGAGATTTCAAGAACACC 10081 AGGTAAGCATTTGTTTTATATTGGTTTTATTTCACCTGGGCTGAGATTTCAAGAACACC 10141 CCAGTCTTCACAGTAACACATTTCACTAACACTTTACTAAACATCAGCAACTGTGGCCT 10141 CCAGTCTTCACAGTAACACATTTCACTAAACATTACTAAACATCAGCAACTGTGGCCT 10201 GTTAATTTTTTAATAGAAATTTTAACTCCTCATTTTCTTTC | 10261 TTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTGAAAAATCAAAGACCTG 11111111111111111111111111111111111 | ON 10501 ATCACTTGTAGGAAAAGCCCTGAAAATTTGAGAAAACAAAC |

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AIGTTATTTCAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG 1440
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24d2(C)
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24d1(G)
     5606..5881
                                                                                                                                        for
allele
LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..56

LOCATION: 6040..6153, 7107..7147)

OTHER INFORMATION: /product= "Hereditary Hemochromatosis

OTHER INFORMATION: /note= "No. 6228594mal or wild-type (u

OTHER INFORMATION: hereditary Hemochromatosis (HH) gene
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LOCATION: 3852..3891
COTHER INFORMATION: /note= "start and stop positions of the Information normal or wild-type (unaffected) of the Information: sequence surrounding variant for OTHER INFORMATION: allele (SEQ ID NO:41)"
                                                                                                                                                                                                                                                                                    NAME/KEY: -
LOCATION: 5507..6023
LOCATION: 5507..6023
OTHER INFORMATION: //note- "start and stop positions
OTHER INFORMATION: normal or wild-type (unaffected)
OTHER INFORMATION: sequence surrounding variant for
FOTHER INFORMATION: allele (SEQ ID NO:20)"
NAME/KEY: allele
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NAME/KEY: -
CATION: 140..7319
OTHER INFORMATION: /note= "start and stop positions
OTHER INFORMATION: normal or wild-type (unaffected)
OTHER INFORMATION: cDNA (SEQ ID NO:9)"
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OTHER INFORMATION: 'ThenOtype= "normal or wild-type
OTHER INFORMATION: (unaffected)"
OTHER INFORMATION: /label= 2442
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LOCATION: replace(5834, "g")
OTHER INFORMATION: /phenotype
OTHER INFORMATION: /label= 24
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| qa | Qy Db | Qy | Oy Dp | Qy | Oy Dp | Oy Dp | δδ | oy Dp | oy Dp. | oy Op | oy O | À q | Qy Dp | da Db | oy Op | oy Op | Oy Dp | Qy |
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| 1 ACCCAGGACTGTCATATGGAAGAAGAAGACTGGACTGCAACTCACCGTTCACAAAATGAGGA | CCAGACACAGCTGATGGTATGAGTTGATGCAGGTGTGTGGGGGCTCAACATCCTGCTCC | 1 CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGCACTA | 1 CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTTTGAAGCTTTGGGCTA | 1 CGTGGATGACCAGCTGTTCTGTGATNATGAGAGTCGCGGTGGGAGCCCGAAC | 1 TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCTGAA | 1 AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACACGAGGTLIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | 1 CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC | 1 ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGGAAGAGGGAAG | 1 GAATTIGCTTCCTGAGATCATTIGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT | TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG | 1 GGCTGTGAAATGCAAGAAGACAACAGTACCGAGGGCTACTGGAAGTACGGGTATGATGGG | CAGGACCACCTGAATTCTGCCCTGACACTGGATTGGAGAGCAGCAGAACCCAGGGCC | 1 TGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGGCAGAACAGGGCCTAC | CTGGAGAGGGACTGCCCTGCACAGCTGCAGCTGGTGGAGCTGGGGAGGGGTGTTTTG | GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG | 1 AGGTIGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC | 1 TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA | 1 TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTTCTCCATGCATATGGCTCAAAGGGAA |
| 3601 | 366. | 3721 | 378. | 384 | 3901 3901 | 3963 | 4021 | 4081 | 4141 | 4201 | 4261 | 4321 | 4381 | 4441 | 4501 | 4561 | 4621 | 4681 |
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CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG GTGTCTATGGCCCTTGCTTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA 4861 AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA 4921 ACCCGTCTCTAAAAAAATACAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA 5041 GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAA 5101 AAAAAAAAAAAAAAAAAAGAGAATTCAGAGATCTCAGCTATCATATGAATACCAGGACAAA AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC CTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCAATCATTTTCAATGCACATAA TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTCCCCCAGAACATCACCATG AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA 5341 AGGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATTTACATGTG AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG AACCTATAGAAGGAAGTGGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG CTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC

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| TAGTCATTGGAGTC TAGTCATTGGAGTC | TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT 6120 |
| TGTTCATAATATTA TGTTCATAATATTA | CATAATATTAAGGAAGGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT 6180 |
| TAGTACCTCTGCCCC TAGTACCTCTGCCCC | CTCTGCCCCAGGGCACAGTGGGAAGAGGGCAGAGGGATCTGGCATCCATGGG 6240 |
| AAGCATTTTCTCAT | aagcatttttctcatttatattctttggggacaccagcagctccctgggagacagaaat 6300 |
| AATGGTTCTCCCCAG | CTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT 6360 |
| TTTGCAAGAGCTGTT: TTTGCAAGAGCTGTT | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT 6420 |
| TCTCAGAACCCAAAT TCTCAGAACCCAAAT | CTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGATGAAGAG 6480 |
| ACCCCATGAGGTCCT | CATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG 6540 |
| ATCACATTCAGCTGG | ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGAGAGAG |
| TTAGGTGAGGTTGAA | TTAGGTGAGGTTGAAGATGATGGGGGGTCTACACACAGAGGAGCAACCATGCCAAGTAGGA 6660 |
| GAGTATAAGGCATAC | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCTGAGTTTGGGT 6720 |
| AGCTATCACTCACCA | AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGGAAAGA 6780 |
| GAATCAGAAAGAAGG | GAATCAGAAAGAAGCCAGCTCATACAGAGCCAAGGGTCTTTTGGGATATTGGGTTATGA 6840 |
| TCACTGGGGTGTCAT | CACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATATGGTG 6900 |

7080 7080 7140 7140 7200 7260 7320 7320 7380 7380 7440 7440 7500 7560 7620 7620 7680 7740 7740 7800 7860 7200 0969 ACATACACCTATGTCATTTCATTTTGGAACAGGACTCCTTAAATTTGGGGGAACAGGACTCCTTAAATTTGGGGGAACAGGACTCCTTAAATTTGGGGGAACAGGACTCCTTAAATTTGGGGGA AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCAGTAT TICCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG GTGAATGAGGAAAATAAGGAAGAAGAAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT CTTTCCTGGGTCTCTTGTCTCCACAGGAGGAGCCATGGGGCCACTACGTCTTAGCTGAACG 7621 7741 7741 7921 7921 7081 7141 7141 7201 7201 7261 7261 7321 7321 7381 7441 7441 7501 7501 7561 7561 7621 7681 7681 7801 7801 7861 7861 6901 6961 7021 7021 7081 7381 6901 1969 qq QQ οy g g ΟŊ QQ Dρ Ωp qq g Qy Db QΥ QY Ω Qγ рp Q ōλ qq δ ογ Οÿ g q Oy Db ΩD QY Db δý Qγ Ω δý

| ā | Ø A | ο <u>σ</u> | Ó Ā | δ B | 6 B | 67 A | 6 B | 67 TB | 6 B | හි බී | රි ධි | රි ධී | හි සි | හි කී | රි ධි | 8 B | 8 <u>a</u> | 8 |
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| 8040 | 8100 | 8160 8160 | 8220 8220 | 8280 | 8340 | 8400 | 8460 8460 | 8520 8520 | 8580 8580 | 8640 8640 | 8700 8700 | 8760 8760 | 8820 | 8880 | 8940 | 9000 | 9060 | 912 |
| ATTATGATAAGGATGATAAAAGCACTTACTTGGTGTCCGACTCTTCTGAGCACCTACTTA | . CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATGCCCAT | . TTCTTTTTTAAATGAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC | . AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGGGTCAGGCCATCCTGGC | TAACATGGTGAAACCCCATCTCTAATAAAAATACAAAAAATTAGCTGGGCGTGGTGGCGG | ACCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG | . CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA | . CTCCATCTCAAAAAAATAAAATAAAAATAAAAAATGAAAAAAAA | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG | TTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | GGAAGGAGATGGCTCTTCTCTTGTCTCATTGTGTTTCTTCTGAGTGAG | GAAGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAGTC | CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTGTTGCTCTTTTGGCATTCA | TITCITIGGACCCTACGCAAGGACTGTAATIGGIGGGGACAGCTAGTGGCCCTGCTGGGC | TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC | CCTCAATGAAGTGGAGTAAGCTCTCTCATTTGAGATGGTATAATGGAAGCCACCAAGTG | GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA | AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA | AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT |
| 7981 7981 | 8041 | 8101 | 8161 8161 | 8221 | 8281 | 8341 | 8401 | 8461 | 8521 | 8581 | 8641 | 8701 8701 | 8761 8761 | 8821 | 8881 | 8941 | 9001 | 9061 |
| Òy Db | Qy Db | Qy | Qy Db | Oy Db | Qy | Ογ Db | Qy Db | Qy | Qy | Qy | Qy | Qy Dp | Qy Db | Qy Db | Qy | Qy | Qy | Qy |

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NAME/KEY: allele
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Matches 10823; Conse
                                               CLASSIFICATION:
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LOCATION:
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                                10201 GTTAATITITITAATAGAAATITITAAGTCCTCATITICITICGGTGTTTTTTAAGCTTAA 10260
                                                                                               TITITCIGGCTTTATICATAAATICTTAAGGTCAACTACAITTGAAAAATCAAAAGACCTG 10320
                                                                                                                  CATITIAAAITCTIAITCACCICIGGCAAAACCATICACAAACCAIGGIAGIAAAAGAGAA 10380
                                                                                                                                                                                 10321 CATITIAAAITCITATICACCICIGGCAAAACCAITCACAAACCAIGGTAGTAAAGAGAA 10380
                                                                                                                                                                                                                                 10381 GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG 10440
                                                                                                                                                                                                                                                    10441 CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGATGGGTGGAGGGGCGTGCACTGGAA 10500
                                                                                                                                                                                                                                                                                                                 CTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACAAGA 10620
                                                                                                                                                                                                                                                                                                                                                                                                                                             10621 AAGGAAAACAAACCACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10741 CAGTATTTTATAAAACATTCTTCACAAACTCACACACTTTAAAAACAAAACGTGTCTC 10800
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GENERAL INCORNATION:
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GENERAL INCORNATION:
APPLICANT: Feder, John N.
APPLICANT: GILKE, Andreas
APPLICANT: Ruddy, David
APPLICANT: Tsuchihashi, Zenta
APPLICANT: Horoliff, Roger K.
TILLE OF INVENTION: Hereditary Hemochromatosis Gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
CITY: New York
COUNTRY: USA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 3, Application US/09503444A Patent No. 6228594
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COMPUTER READABLE FORM:
MEDLUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: Windows 95
SOFTWARE: WordPerfect Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WordPerfect Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS:
ADDRESSEE: Pennie &
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 10825;
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AMATION: /product= "Hereditary Hemochromatosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /phenotype= "Hereditary Hemochromatosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note= "Hereditary Hemochromatosis (HH) gene 24d1 allele"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: -10..7319
LOCATION: ANOIS ANOIS ANOIS FOR OTHER INFORMATION: Anois Start and stop positions for OTHER INFORMATION: 24d1 allele cDNA (SEQ ID NO:10)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note= "start and stop positions for
genomic sequence surrounding variant
for 24d2(C) allele (SEQ ID NO:41)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note= "start and stop positions for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       genomic sequence surrounding variant for 24d1(A) allele (SEQ ID NO:21)"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%; Score 10823;
larity 100.0%; Pred. No. 0;
Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                           8907-0088
CURRENT APPLICATION DATA:
ADDITCATION NUMBER: US/09/503,444A
                                                                                PRIOR APPLICATION DATA:
APPLICATION DATA:
APPLICATION NUMBER: 08/652,265
FILING DATE: 23-May-1996
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/632,673
FILING DATE: 16-Apr-1996
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/630,912
FILING DATE: 04-Apr-1996
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /label= 24d1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCATION: replace(5834, "a")
OTHER INFORMATION: /phenotype
OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         mutation"
                                                                                                                                                                                                                                                                                                                     28,462
                                                                                                                                                                                                                                                                                                                                                          TELECOMMUNICATION INFORMATION:
TELEPHONE: 212-790-9090
TELEFAX: 212-869-9741
                                                                                                                                                                                                                                                                                                                                                                                                                       INFORMATION FOR SEQ ID NO: 3: SEQUENCE CHARACTERISTICS: LENGTH: 10825 base pairs TYPE: nucleic acid STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY: linear MOLECULE TYPE: DNA (genomic)
                                             14-Feb-2000
                                                                                                                                                                                                                                                                                                 NAME: Poissant, Brian M. REGISTRATION NUMBER: 28, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3852..3891
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LOCATION: 5507..6023
OTHER INFORMATION: /r
OTHER INFORMATION: 96
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FEATURE:
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OTHER INFORMATION:
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                          APPLICATION NUMBER:
FILING DATE: 14-Fe
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|---|----|---|---|--|--|--|---|---|---|---|--|--|--|--|--|--|--|--|
| ATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACCCCC | | . CTGCTGTAGGAGAGAGAGACTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGTT | . TTACTGGGCATCTCCTGAGCCTAGGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCG | . TTCCCGGCCCCCCAAAAGAGGGGGAGTTTAACGGGGAGGTGCGGCCAGAGCTGGGGAA | . ATGGGCCCCCGCGAGCCAGGCCGCGTTCTCCTCGATGCTTTTGCAGACCGCGGTCCTG | CAGGGGCGCTTGCTGCTGAGTCCGAGGGCTGCGGGCGAACTAGGGGCGCGGGGGGGTG | GAAAAATCGAAACTAGCTTTTCTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC | TCAACCCTATCCGCAAGCCCCTCTCCCTACTTTCTGCGTCCAGACCCGTGAGGGAGTGC | CTACCACTGAACTGCAGATAGGGGTCCCTGGCCCAAGACCTGCCCCCTCCCCCGGCTGT | CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCACTCCCTTCCCCCAACTAGATTT | Taaataaatctcgtagttcctcacttgagctgagctaagcctgggggtccttgaacctgg | AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG | AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGCAGGATCCGCACGG | GGTTTCCACCTCAGAACGAATGCGTTGGGCGGTGGGGGCCCGAAAGAGTGGCGTTGGGGA | TCTGAATTCTTCACCATTCCACCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGT | GGGAGGCTCCTGAGAGGCCTACCTCGGGCCTTTCCCCACTCTTGGCAATTGTTCTTTT | GCCTGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG | CTAGGCTTTATTGATTTGCAATGTGCTGTAATTAAGAGGCCTCTCTACAAAGTACTGA |
| 61 | | 181 | 241 | 301 | 361 | 421 | 481 | 541 | 601 | 661 | 721 | 781 | 841 | 901 | 961 | 1021 | 1081 | 1141 |
| db Qy | Op | Qy Dp | oy op | oy da | Oy Dp | Qy | Qy | Qy | Qy | Qy | Qy | Oy Dp | Oy Dp | oy Ob | oy B | Qy Db | Qy | QY |

| QY | 1201 | AATGAACATGTAAGCAATGCACTCACTTCTAAGTTACATTCATATCTGATCTTATTTGA 12 |
|----|------|---|
| qq | 1201 | |
| Qy | 1261 | ICACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT 13 |
| qq | 1261 | TTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT 13 |
| QY | 1321 | GGAATITCAGATIATATAACTCTITTCAGGTTACAAAGAACATAAATAATCTGGTTTTCTG 138 |
| QQ | 1321 | ICAGATTATATAACTCTTTTCAGGTTACAAAGAACATAAATAA |
| Qy | 1381 | CAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG 1 |
| qq | 1381 | STIATTICAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG 144 |
| ΟŊ | 1441 | TGGGTCACACGCCGGCCTCAGCACACACTTTGAGTTTTGGTA 150 |
| qq | 1441 | GTAG |
| ΟŊ | 1501 | FIGTATCCACATTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTG |
| QQ | 1501 | CTTCCTGG 156 |
| QY | 1561 | TTATTCAATGGTACACTGGGGCTTTTGGTGGCGAGAGCTCATGTCTCCACTTCATAGC |
| Dp | 1561 | AAAT |
| ΟŊ | 1621 | CTTAAAACATCACACTGCATTAGAGGTTGAATAAAAATTTCATGTTGAGCAG |
| QQ | 1621 | ATGATTCTTAAACATCACACTGCATTAGAGGTTGAATAATAAAATTCATGTTGAGCAG |
| Qy | 1681 | GTTTACAAGTGTAAATGAGTCCCAGCCATGTGTGCACTGTTCAAGCCC |
| QQ | 1681 | |
| δλ | 1741 | GCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA |
| QQ | 1741 | SOAGAGAGCAGGGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGGAGA |
| QY | 1801 | GTTGTGA 1 |
| QO | 1801 | ATGACAATAAGCAAATGAGGAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA |
| δŏ | 1861 | TGAAGGA 1 |
| qa | 1861 | AAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAGGA 1 |
| QY | 1921 | SATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG |
| DP | | SAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG |
| δλ | 1981 | AAAGCGGGTTTTCTCAGCACTACTCATGTGTGTGTGTGGGGGGGG |
| QQ | 1981 | GGATTAAAAAGGGGTTTTCTCAGCACTACTCATGTGTGTG |
| δy | 2041 | GGGGGTGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT 210 |
| qq | 2041 | STGGGGGTGGGGAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCTGT 210 |
| δy | 2101 | ICACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT 216 |
| qq | 2101 | CTCCCTACTCACTAGGTGCTAGGAGCACTCCCC |
| Qy | 2161 | TTGCCACATGTCACCTAGTAGACACACCTGGTTAAGAAGCTCGGGTTGAAAAA 222 |
| Ωp | 2161 | TITGCCACATGTCACCTAGTAGACAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA 222 |
| Qy | ~ | 3TACTCCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGG |
| QQ | 2221 | AAACAAGTAGTGGGGGAGTAGGGGCCAAGAAGTAGGTAATG |

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| | TGTGGTGTGAATTCTAGCCAAGGAGTA 2340 | TCTGGCTGCTATGTGGAAAGCAGAATG 2400 | SCCAGGAAGCTGTTACACAGTCCAGGCAAG 2460 | GGGAGTGACAACCATTGTCTCCTGAA 2520 | CTATGTTGTGTGAGAAAGAGAAGAATTGG 2580 | CCAAGGAGAGCAGATTCCTGAGCTCAGGA 2640 | CCTTCTCTACAAAAATACAAAATTA 2700 | CTACTCGGGAGGCTGAGGTGGAGGTA 2760 | GCCATGACTGTGCCACTGTACTTCAGC 2820 | CCCCCTGAAAAAGAGAAGAGTTAAAGT 2880 | GAGCAGTGGGGTAATTGGCAATGCCAT 2940 | TTGGGGTAAATCAAGGATCTGCATTTG 3000 | rccaagtggtgaggccacataggcagtt 3060 | 3GCACGGTGGCTCACTTCTGTAATCCCAGCACT 3120 | CCAGGAGTTTGAGACAAGCTTGGCCAACA 3180 | AATTAGCCTGGTGTGGTGGCGCACGCCT 3240 | TAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG 3300 | CAGCCTGGGTGATAGAGTGAGACTCTGT 3360 | |
|--|--------------------------------------|--|---|-------------------------------------|--|---|------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---|--|--|---------------------------------------|--|---------------------------------------|--|
| | | 11 ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTV | 01 AAGGGAGCAACAGTAAAAGCAGGGAGCCCAC | 461 AGGTAGTGGAGTGGGCTGGGTGG | 521 TATATTCTGAAGGAAGTTGCTGAAGGATT | 581 CTGGGTGTAGTACCTCATGCCAAGGAGGAGGAGGAGGAGGAGGAGGAGGAGGGAG | 641 GTTCAA 641 GTTCAA | 701 GCTGGTGTGGCATGCACCTGTGATCCTAG | 761 TIGCTIGAGG | 821 CTAGGTGACAGAGCAAGACCCTGTCTCCC | 881 TGACTTTGTTCTTTATTTTAATT | 941 TTCTGAGATGG7 | 001 GGACATGTTAAGTTTGAGATTCCAGTCAGGCTT | 061 CAGTGTAAGAATTCAGGACCAAGGCTG(| 121 TTGGTGGCTGAGGCAGGTAGATCATTTGAGGT | 181 TGGTGAAACCCCATG' | 241 ATAGTCCCAGGTTTTCAGGAGGTT 1111111111111111111111111111111 | 301 TTGCAGTGAGCTGAGATTGTGCCACTGCACTCC | |

4440 4440 4500 4080 4080 4140 4140 4200 4200 4260 4260 4320 4320 4380 4380 CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCCTTGTAGAGCTTTGGGCTA 3840 3900 4020 3420 3480 3480 3660 3660 3720 3720 3780 3780 CIGGAGAGGGACTGCCCIGCACCAGCTGCAGTTGCTGGAGCTGGGGGAGAGAGTGTTTG GGCTGTGAAATGCAAGAAGACAACAGTACCGAGGGCTACTGGAAGTACGGGTATGATGG CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCTGAA AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG GAATTTGCTTCCTGAGATCATTTGGTCCTTGGGGATGGTGGAAATAGGGACCTATTCCTT TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG CCAGACACAGCTGATGGTATGAGTTGAGGTGTGTGGAGCCTCAACATCCTGCTCCC CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTTGCACTA CAAGGGTATGTGGAGAGGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC ACCCAGGACTGTCATATGGAAGAAGACAGGACTGCAACTCACCTTCACAAAATGAGGA TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACCCTTAAC ATTITCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 4441 3961 4081 4141 4141 4201 4261 4261 4321 4321 3901 3961 4021 4021 4081 3841 3901 3481 3541 3541 3601 3601 3661 3721 3781 3781 3841 3361 3421 3481 3661 3721 3421 qq g g ŏ Db g g QΥ Q Q Db Op ò qq ΟŽ Q δ g òγ qq Qγ QQ Q pp QY ò ρý Db Q Dp Ω $^{\circ}$ Qγ QΥ QΥ

| 4500 | 4560 | 4620 | 4680 | 4740 | 4800 | 4860 | 4920 | 4980 | 5040 | 5100 | 5160 5160 | 5220 | 5280 5280 | 5340 | 5400 | 5460 5460 | 5520 5520 | 5580 |
|---|--|--|---|--|--|--|---|--|---|--|--|--|--|---|--|--|---|--|
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| 4441 | 4501 | 4561 | 4621 | 4681 | 4741 | 4801 | 4861 | 4921 | 4981 | 5041 | 5101 | 5161 | 5221 5221 | 5281 5281 | 5341 | 5401 | 5461 | 5521 |
| Cb | Qy | Qy Dp | Qy Db | Qy Db | Qy | Qy Dp | Qy Db | Oy Ob | Qy Dp | Qy Dp | ογ Db | oy Dp | Qy | δy | Qy | Qy | ç P | Oy Db |

5760 5760 5880 5940 5940 0009 0009 0909 0909 6120 6120 6180 6240 6360 6420 6420 6480 6480 6540 6540 0099 0099 6180 6240 6300 0999 TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACCACCAGAACATCACCATG CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG CTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT TGTTCATAATATTAAGGAAGAGCCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT TITGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA GIGGCAATCAAAGGCTTTAACTTGCTTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC 6241 5581 5581 5641 5641 5701 5701 5761 5761 5821 5821 5881 5881 5941 5941 6001 6001 6061 6061 6121 6121 6181 6181 6241 6301 6301 6361 6361 6421 6421 6481 6481 6541 6541 6601 6601 OY Db QY Db ΟŽ g δ g Qγ g δλ Dp δ g δy g δy g δy qq Q δ qq δ q ŏ g qq ò q δy q g Q δŽ à

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| Qy 6661 GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 6720 | QY 6721 AGCIATCACTCACCAATTATGCATTTCTACCCCTGAACATCTGTGGTGTAGGGAAAAGA 6780 | QY 6781 GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA 6840 | Qy 6841 TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATATGGTG 6900 | OY 6901 AATGIGITGITAAGAAGITAGAIGAGGGGGGGGCCGCTTAGAAGCCAATAAGCAT 6960 11111111111111111111111111111111111 | QY 6961 TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG 7020 Db 6961 TTCCAGATGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATG 7020 | QY 7021 GTGAATGAGGAAATAAGGAAGAGAGAGAGAGATGGTGCCTAGGTTTGTGATGCCT 7080 | QY 7081 CTITCCTGGGTCTCTTGTCTCCACAGGGGGCCATGGGGCACTACGTCTTAGCTGAACG 7140 | QY 7141 TGAGTGACAGCCTGCAGACTCACTGTGGGAAGACAAAACTAGAGACTCAAAGA 7200 Db 7141 TGAGTGACACCGGCAGCCTGCAGACTGTGGGAAGAACAAAACTAGAGACTCAAAGA 7200 | Qy 7201 GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT 7260 | Oy 7261 GCCTGACGAACTCCTTGATTTTAGCCTTCTCTTTTCCTCAAAAAGATTTCCCCAT 7320 | QY 7321 TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG 7380 | QY 7381 TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG 7440 | Qy 7441 ACATACACCTATGTCATTTCCTATTTTTGGAAGACGCCTCCTTAAATTTGGGGGA 7500 | QY 7501 CTTACATGATTCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT 7560 | OY 7561 AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT 7620 | QY 7621 TIGAATCCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC 7680 | QY 7681 CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG 7740 V | y 7741 GCACCTGTCCCAGAAAAAGCATCATGGCTATCTGTGGGTAGTATGATGGGTGTTTTAGC 7800 |
| ç, Q | ç d | Q D | S S | O P | ç g | ç, q | Q P | δ a | Ø 5 | o a | Q D | 0 0 | Q 5 | 9 B | S P | Ş g | đơ Tộ | Qy |

8040 8040 8100 8100 8160 8160 8220 8220 8280 8340 8340 8400 8400 8460 8460 8520 8520 8580 8580 8700 8700 8760 8760 8820 8820 8880 TCCAGACCTGAAGAATCACAATAATTTCTACCTGGTCTCCTTGTTCTGATAATGAAA GAAGGGGAACAGCAGAAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCTCTGTTGCTCTTTGGCATTCA TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCCTTGTTCTGATAATGAAA ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA CATGCATTACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT TTCTTTTTTAAATGAAGAAAGTGGAGCCGGGCACGGTGGCTCACGCCTGTAATCCC ACGCCTGTAGTCCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG CAGAGCTTGCAGTGAGCCGAGTTTGCGCCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG TITCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 8041 8401 8401 8581 8641 8761 7801 7801 7861 7861 7921 7921 7981 8041 8101 8101 8161 8161 8221 8221 8281 8281 8341 8341 8461 8461 8521 8521 8581 8641 8701 8701 8761 8821 7981 Q QQ Op Вb Op g g g OD Db δy qq QQ οy δy g Op οy g Ω οy OD οy g QQ δ Ω QΥ QΥ οğ Οy Qγ Qγ Qγ ò ò

Thu Jun

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|---|---|-----------------|
| 81 CCTCAATGAAG | | qq |
| 941 GCTTAGAGGAT | AAA 900 | da da |
| 9001 AAAATCTAACC | , , , | do da |
| 9061 AAAGAGICITI | ATGAT | QY Db |
| 9121 CTCGGCTCACT | CCTCCCA 918 | oy Db |
| 81 AGTAGCTGGGA | AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTGTATTTTTAGTAGA 9240 | Oy Db |
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| 301 TGCCTCGGCCT 301 TGCCTCGGCCT | 6 6 | da Db |
| 361 AGAGTCTTAAT 361 AGAGTCTTAAT | 942 | QQ QD |
| 9421 GCTGCATAAAT | GCTGCATAAATGTGGTACAAGCATTCTGTCTAGAAGGCAGGTGCTTCAGGATACCATAT 9480 | QY |
| 81 ACAGCTCAGAA(| ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTCTTCTT 9540 | QQ QQ |
| 1 TTAAACCATTT | 096 | Qy |
| 601 ACGCTCATTGT/ | 996 g 1 9 960 | QY Db |
| 61 TGAAAAACTAT | GAAAAACTATTAACAACTTGTCTATTACTGTTAGTATTGTTGTTGCATTAAAAATGCA 9720 | KO GD |
| 21 TATACTTTAAT! | 978 | QQ DP |
| 1 ATCTTGTGTATA | ATCTTGTGTATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTT | HH (7) |
| 841 CTTTACATTTTC | CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATGGTGTT 9900 | ; Pate ; GEN |
| 9901 TCTTCACTCTAC | CTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC 9960 | |

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9961 CATTCTGAAAGCATATGACAAATTATTTCTCTCTTAATATCTTACTATACTGAAAGCAGA 10020
                                                                                                                                                                                                                                                                                         CATICIGAAAGCAIAIGACAAAITAITICICITIAAIAITITITATATOTIACIAAAGCAGA 10020
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                                                                                                          TTTTTCTGGCTTTATTCATAAATTCTTAAGGTCAACTACATTTGAAAAATCAAAGACCTG
                                                                                                                                                                                                                                                                                                                                                                                           .0441 CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA
                                                                                                                                              10141 CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT
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ent No. 6228594
NNERAL INFORMATION:
APPLICANT: Thomas, Winston J.
APPLICANT: Feder, John N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Drayna, Dennis T.
Feder, John N.
Gnirke, Andreas
Ruddy, David
Tsuchihashi, Zenta
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APPLICANT:
APPLICANT:
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9961
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NAME/KEY: CDS
LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881, LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..5881, LOCATION: 6040..6153, 7107..7147)
COTHER INFORMATION: /Product="Hereditary Hemochromatosis OTHER INFORMATION: mutation"
OTHER INFORMATION: /note="Hereditary Hemochromatosis (HH) OTHER INFORMATION: gene 24d2 allele"
FEMTURE:
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OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: forced sequence surrounding variant OTHER INFORMATION: for 24d2(G) allele (SEQ ID NO:42)"
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LOCATION
LOCATION
OTHER INFORMATION: /note= "start and stop positions for OTHER INFORMATION: 24d2 allele cDNA (SEQ ID NO:11)"
APPLICANT: Wolff, Roger K.
TITLE OF INVENTION: Hereditary Hemochromatosis Gene
NUMBER OF SEQUENCES: 44
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8907-0088-999
                                                                                                                                                                                                                                                                                                                                                                         CURRENT APLICATION DATA:

SOFTWARE:
WordPerfect Version
CURRENT APPLICATION DATA:
RPLICATION UNBER: US/09/503,444A
FILING DATE: 14-Feb-2000
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/652,265
FILING DATE: 23-May-1996
FILING DATE: 16-Apr-1996
PRIOR APPLICATION NUMBER: 08/632,673
FILING DATE: 16-Apr-1996
PRIOR APPLICATION DATE: 16-Apr-1996
PRIOR APPLICATION DATE: 16-Apr-1996
ATTORNEY/AGENT INFORMATION:
NAME: POISSAIL, BRIAN M.
REGISTRATION NUMBER: 28,462
REGISTRATION NUMBER: 28,462
REGISTRATION NUMBER: 8907-0088-99
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
                                                                                                          ADDRESSEE: Pennie & Edmonds LLP
STREET: 1155 Avenue of the Americas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAME/KEY: allele
LOCATION: replace(3872, "g")
OTHER INFORMATION: /phenotype
                                                                                                                                                                                                                                           ZIP: 10036
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: Windows 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INFORMATION FOR SEQ ID NO: 5: SEQUENCE CHARACTERISTICS: LENGTH: 10825 base pairs TYPE: nucleic acid STRANDEDNESS: single TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOLECULE TYPE: DNA (genomic)
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LOCATION: 5507..6023
OTHER INFORMATION: And
OTHER INFORMATION: Gen
OTHER INFORMATION: for
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                                                                                                                                                                CITY: New York
STATE: New York
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                                                                                                                 61 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCCT
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                                           Length 10825;
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                                                             3,
                                             DB 4;
                                           Score 10823; L
Pred. No. 0;
0; Mismatches
          /label= 24d2
                                           Query Match 100.0%;
Best Local Similarity 100.0%;
Matches 10823; Conservative
; OTHER INFORMATION:
; OTHER INFORMATION:
US-09-503-444A-5
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|--|--|--|---|--|-------------------------------------|--|---|---|
| TCTGAATTCTTCACCATTCCACCCACTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGTGTTTTTGTTGAGGTTGGTGAGGTTGTTTTGTTTTTT | CTAGGCTTTATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA | TTTTCACTAGGCATAGGAAGCTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACT | AIGTAATTICAAGTACTACAGCTICTAATCTTAGTTGACAGTGATTTTGCCCTGTAG | CGTGTATCCACATTTTACACATGACAAATGACATGACAGGCTGCAGGCTTCCTG | TAGAGGTTGAATAATAAAATTTCATGTTGAG | CAAGGAAGAGAGAAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGAGA | GAAGCAGAAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGACATGAAGGA [1] [1] [1] [1] [1] [1] [1] [1] [1] [1] | TJGGATTAAAAAGCGGGTTTTCTCAGCACTACTCATGTGTGTG |
| 961 961 1021 1021 1081 | 1141 1141 1201 1201 | 1261 1261 1321 1321 | 1381 1381 1441 | . 0 9 9 | 1621 1621 1681 1681 | 1741 1741 1801 1801 | 1861 1861 1921 1921 | 1981 1981 2041 |
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2400 2640 2940 2100 2160 2160 2220 2280 2280 2340 2340 2400 2460 2460 2520 2520 2580 2580 2640 2700 2700 2760 2760 2820 2820 2880 2880 3000 3000 3060 3060 3120 3120 TTGGTGGCTGAGGCAGGTAGATCATTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA 3180 GITCAAGACCAGCCIGGGCAACACAGCAAAAACCCCTICTCTACAAAAATACAAAATTA TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC TTCTGAGATGGTGAAGGCAGAAAGAGCAGTTTGGGGGTAAATCAAGGATCTGCATTTG GTTCAAGACCAGCCTGGGCAACACACAAAACCCCTTCTCTACAAAAAATACAAAAATAA GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGGTA GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTAATTCTAGCCAAGGAGTA AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG AGGTAGTGGAGTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGAGCAGATTCCTGAGCTCAGGA TGACTTTGTTCTTTATTTTAATTTTATTGGCCTGAGCAGTGGGGGTAATTGGCAATGCCAT GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT CAGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGA ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAAGAAATTGG 2041 2101 2161 2221 2281 2281 2341 2341 2401 2401 2461 2461 2521 2521 2581 2581 2641 2641 2701 2701 2761 2761 2821 2821 2881 2941 2941 3001 3001 3061 3061 3121 2161 2221 2101 Ωp qq αq qq ΩD Ω g Op Qγ QQ δŽ Op δ Dp δy qq Ω Ωp ŏ qq QY d δ g qq Qγ δλ Q δ Ω QΥ Qγ δ QY δŽ

| QQ | 3121 | TTGGTGGCTGAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA 3180 |
|------------|--------------|---|
| οy | 3181 | STGAAACCCCATGTCTAAAAATACAAAAATTAGCCTGGTGTGTGGGCCGCACGCCT |
| QQ | 3181 | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCCT 3240 |
| Oy Db | 3241 | ATAGTCCCAGGTTTTCAGGAGGTTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG 3300 |
| O.y D.p | 3301 3301 | TTGCAGTGAGCTGAGATTGTGCCACTGCAGTCCAGCCTGGTGATAGAGTGAGACTCTGT 3360 |
| Oy Dp | 3361 3361 | CTCAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG 3420 |
| Oy Db | 3421 | TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACTTAAC 3480 |
| Oy Db | 3481 | ATTTCTAGAATCCACCAGCTTTAGTGGAGTCTGTCTAATCATGAGTATTGGAATAGGAT 3540 |
| Qy Db | 3541 3541 | CTGGGGGCAGTGAGGGGGGGGGCAGCCACGTGGGAGAAAAGCACACAAGGAAAGAGC 3600 |
| Qy Db | 3601 3601 | ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA 3660 |
| oğ Oğ | 3661 3661 | CCAGACACAGCTGATGGTATGATGGTGTGTGTGTGGGGCCTCAACATCCTGCTCCC 3720 |
| Oy Dp | 3721 3721 | CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGCACTA 3780 |
| Qy Db | 3781 3781 | CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTCCTTGTTTGAAGCTTTGGGCTA 3840 |
| Qy Dp | 3841 | CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC 3900 |
| ò q | 3901 3901 | TCCATGGGTITCCAGIAGAAITTCAAGCCAGAIGIGGCTGCAGCTGAGTCAGAGTCTGAA 3960 |
| Oy Db | 3961 3961 | AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG 4020 |
| Oy Db | 4021 | CAAGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCAGAGCTTTTCATCTTTTC 4080 |
| දු දු | 4081 | ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGGAAGAGGGAAG 4140 |
| oy Pb | 4141 | GAATITGCTICCTGAGAICATITGGICCTTGGGAATGGGAATAGGGACCTATICCTT 4200 |
| oy op | 4201 | TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG 4260 |

4440 4920 5340 4380 4440 4680 4740 4800 4800 4860 5040 5040 5100 5100 5160 5220 5280 4320 4320 4380 4500 4500 4560 4560 4620 4620 4680 4860 4920 4980 4980 5160 5220 GIGGCCATGCTTTTTATTTAACCAATAATCTTTGTATATTATAACCGGTAA ACCCGTCTCTAAAAAAATACAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCA AAAAAAAAAAAAAAAAAGAGAATTCAGAGATCTCAGCTATCATATGAATACCAGGACAAA CTCCTAGGTTGACCCCAGGTGAAACTGACCATCTGTATTCAATCATTTTCAATGCACATAA CTGGAGAGGGACTGCCCTGCACAGCTGCAGCAGTTGCTGGAGCTGGGGAGAGGTGTTTTG AGGTTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA TCAGACAGCCACAAGTCATGGGTTTAATTTCTTTTTCTCCATGCATATGGCTCAAAGGGAA GIGICIAIGCCCTIGCITITIAITIAACCAAIAAICTITIGIAIAITIAAACCIGITAA AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAAA AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC 4261 4501 4681 4801 4381 4441 4561 4621 4741 4861 4921 4921 4981 5041 5041 5101 5221 5281 4321 4381 4441 4501 4561 4681 4741 4801 4861 4981 5101 5161 5161 5221 5281 4261 4321 -4621 Q qq Q Db φ Ob Op Ωp q Q ΩD òγ QQ g QQ ò g οy qq δy Q δ ŏ g ò δŽ ò ò qq δ QY ογ ò g ò δ

| 5400 | 46 | 5520 5520 | 5580 5580 | 5640 | 5700 | 5760 5760 | 5820 5820 | 5880 | 5940 | 6000 | 6060 | 6120 6120 | 6180 6180 | 6240 | 6300 | 6360 | 6420 | 4 8 |
|--|--|---|--|--|--|--|-------------------------------------|--|--|---|--|--|---|---|--|---|---------------------------------------|--|
| 1 AGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATATTTACATGTG | 1 AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTCTGAAAAGGGTATTTCTTCTTCTCTCCTCC | 1 AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC | CTCATCCTTCCTCTTTCCTGTCAGTGCCTCCTTTGGTGAGGTGACACATCATGTGACC | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATC | AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG | CCCAATGGGGATGGGACTACCAGGGCTGGAT | . CAGAGATATACGINCCAGGIGGAGCACCCAGGCCTGGATCAGCCCCTCATTGTGATCTGG | . GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAATCTATTGGGGGTTGAGGGGGTGCC | TGAGGAGGTAATTATGGCAGTGAGATGAGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG | GTGGCAATCAAAGGCTTTAACTTGCTTTTTTTTAGAGCCCTCACGGTCTGGCACCC | TAGTCATTGGAGTCATCAGGGAATTGCTGTTTTTGTCGTCATCTGTTCATTGGAATTT | TGTTCATAATATTAAGGAAAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT | TAGTACCTCTGCCCCAGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGGG | AAGCATTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAG | AAIGGITCICCCCAGAAIGAAAGICICIAAITCAACAACAICITCAGAGCACCIACIAI | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCT | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTAAAG |
| 5347 | 540] | 5461 | 5521 5521 | 5581 5581 | 5641 | 5701 5701 | 5761 | 5821 | 5881 | 5941 | 6001 | 6061 | 6121 | 6181 6181 | 6241 | 6301 | 6361 | 4 |
| òy Db | Qy Db | Oy Pp | Oy Db | Qy Dp | Qy Dp | oy Og | Qy Db | Qy | Qy Dp | Ολ Db | Qy | Qy Db | Qy Dp | Qy Dp | Qy | QY Dp | Qy | QY |

6480 9600 0999 6720 6720 6780 6840 6780 6840 0069 0969 7020 7020 7080 7140 7140 6900 0969 7080 7200 7260 7260 7320 7320 7380 7380 7440 7440 7500 7560 **ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA** GAATCAGAAAGGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATATGGTG AATGTGTTGTTAAGAAGTTAGATGAGGGTGAGGAGACCAGTTAGAAAGCCAATAAGCAT TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGGAAAAGA CTTTCCTGGGTCTCTTGTCTCCACAGGAGGCGACGGGGCACTACGTCTTAGCTGAACG CTTACATGATTCATTTAACATCTGAGAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG ACATACACCTATGTCATTTCATTTCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGGGA TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG 6541 6481 6481 6421 6541 6721 6841 6901 6721 6781 6781 6841 6901 6961 6961 7021 7021 7081 7081 7141 7201 7201 7261 7381 7441 7441 7261 7321 7321 7501 7381 οy qq δý g δý g ò qq δλ q δ Dp οy QQ g QQ δý δ οy g qq qq g QΥ δ Ω ğ q δ g ŏ q ŏ g ŏ

| 7560 7620 7620 7680 7740 7740 7800 | 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 | 8040 8040 8100 8160 8160 | 8220 8220 8280 8280 8340 8340 | 8400 8400 8460 8520 8520 | 8580 8580 8640 8640 |
|---|--|--|---|--|---|
| 1 TAGATCATTTTAACATCTGAGAAAAGCTTTGAACCCTGGGACGTGGCTGATCAT 1 AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT 1 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | AGGTAGGAGCAAATATCTTGAAGGGTTGTGAAGAGGTGTTTTTTTT | ATTATGATAAGGATGATAAAAGCACTTACTTGTGTGTCGACTCTTCTGAGCACCTACTTA | AGCACTTTGGGAGGCCAAAGCGGTGGATCACGAGGTCAGGAGATCGAGACCTCTGGC | 0-0 0-0 6-6 | 1 TITGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAGAGAAA |
| 756 756 762; 762; 768 778 | 780 780 786 786 792 792 | 798 798 804 810 810 | 816 816 822 822 828 828 | 834; 840; 846; 846; 846; 846; | 852 9 852 7 858 9 858 |
| | 64 64 64 64 64 64 64 64 64 64 64 64 64 6 | 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | 99 99 99 99 99 99 99 99 99 99 99 99 99 | oy oy, |

9420 9480 0096 9720 9720 9420 9480 9300 9360 9360 8760 8760 8820 8820 8880 8880 8940 8940 9000 0906 9060 9120 9120 9180 9180 9240 9240 9300 8700 GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC AGAGTCTTAATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTTGTATTTTAGTAGA TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCATTCA AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGGTTCCGGTGCACATTAAAAAA TTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGTATTTC 9541 9541 9661 9481 9481 9601 9601 9661 9361 9421 8641 8941 8941 9001 9061 1906 9121 9181 9181 9241 9241 9301 9301 9361 9421 8701 8761 8761 8821 8821 8881 8881 9001 9121 8641 8701 qq Q pp qq Dp $_{\rm QY}$ g ΟŸ qq QYg QΥ qq Ω С Qy DP Ωy qq δ Db Ω ð qq Dβ δy QY qq οy Op ò οy q ò Ω δy

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10801 TAAAATCCCCAAATTTTTCATAAAC 10825
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                                                                RESULT 12
US-09-503-444A-7
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                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                              9961 CATTCTGAAAGCATATGACAAATTATTTCTCTCTTAATATCTTACTATACTGAAAGCAGA 10020
                                                                                                                                                                                                                                                                                                                  10320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10261 TITITICIGGCTITATICATAAATICITAAGGICAACTACATITGAAAAATCAAAGACCIG 10320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10561 CTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACAAAGG 10620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10681 TGAGAGGTACAGGCCAAAATTCTTATGTTGTATATAATAATGTCTTATAATAATACTGT 10740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10741 CAGTATTTATAAAACATTCTTCACAAACTCACACACATTAAAAACAAAACACTGTCTC 10800
                                                                                                                                          0966
                                                                                                                                                                                                       CATTCTGAAAGCATATGACAAATTATTTCTCTTTAATATCTTACTATACTGAAAGCAGA
                                                                                                                                                                                                                                                                                                                                   TITITICIGGCTITATICATAAATTCITAAGGTCAACTACATTGAAAAATCAAAGACCTG
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                                                               9841 CITTACATITIGICITACGGAATATITICATICAACIGIGGTAGCCGAATTAATCGTGTT
                                                                                                                                                                                        9901 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                             10141 CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10321 CATTITAAATICTTATICACCTCTGGCAAAACCATTCACAAACCATGGTAAAAGAGAA
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/note= "Hereditary Hemochromatosis (HH)
gene containing a combination of both
24d1 and 24d2 alleles"
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LOCATION: join(361..436, 3762..4025, 4235..4510, 5606..58
LOCATION: 6040..6153, 7107..7147)
OTHER INFORMATION: /product= "Hereditary Hemochromatosis OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCATION: 140.,7319
OTHER INFORMATION: /note= "start and stop positions
OTHER INFORMATION: CDNA containing a combination of
                                                                                                                                                                                                                                                                        Hereditary Hemochromatosis Gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8907-0088-999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and 24d2 mutations"
                                                                                                                                                                                                                                                                                                                                                                                           CITY: New York
STATE: New York
COUNTRY: New York
COUNTRY: USA
ZIP: 10036
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: Windows 95
SOFTWARE: WordPerfect Version 8
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/503,444A
FILING DATE: 14-Feb-2000
CLASSIFICATION DATA:
APPLICATION NUMBER: 08/652,265
FILING DATE: 23-MAY-1996
FRILING DATE: 16-PAPT-1996
                                                                                                                                                                                                                                                                                                                                               1: Pennie & Edmonds LLP
1155 Avenue of the Americas
Sequence 7, Application US/09503444A Patent No. 6228594
                                                                       APPLICANT: Thomas, Winston J. APPLICANT: Thomas, Dennis T. APPLICANT: Brayna, Dennis T. APPLICANT: Gnirke, Andreas APPLICANT: Gnirke, Andreas APPLICANT: Ruddy, David APPLICANT: Wolff, Roger K. TITLE OF INVENTION: Hereditary NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEX: 66141
INFORMATION FOR SEQ ID NO: 7:
SEQUENCE CHARACTERISTICS:
LENGTH: 10825 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28,462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME: Poissant, Brian M.
REGISTRATION NUMBER: 28,462
REFERENCE/DOCKET NUMBER: 89
TELECOMMUNICATION:
TELECHONE: 212-790-9090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    212-869-9741
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720 720 840 840

780

900 960 960

900

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CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGCCTGCTTCCTGG 1560
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC 1740
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                                                    /note= "start and stop positions for genomic sequence surrounding variant for 24d2(G) allele (SEQ ID NO:42)"
                                                                                                                 /note= "start and stop positions for genomic sequence surrounding variant for 24d1(A) allele (SEQ ID NO:21)"
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NAME/KEY: allele
LOCATION: replace(3872, "g")
OTHER INFORMATION: /phenotype=
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NAME/KEY: allele
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| | CAAGGGAGAGAGCAGGAACAAGTCTTTACCCTTTGATATTTTGCATTCTAGTGGAGA | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA | GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA | - AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG | TTGGATTAAAAGCGGGTTTTCTCAGCACTACTCATGTGTGTG | CGGCGTGGGGGTGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT | CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACCAAAAATGTCTCT | AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA | AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA | . GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | - AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGGCAGGAAGCTGTTACACAGTCCAGGCAAG | AGGTAGTGGAGTGGGCTGGGTGGGAACAGAAAAGGAGTGACAAACCATTGTCTCCTGAA | TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAGAGAAATTGG | CTGGGTGTAGTAGCTCATGCCAAGGAGGCCAAGGAGAGAGA | GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAAATACAAAAATTA | GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTGA | TIGCTIGAGCCCAGGAAGTIGAGGCIGCAGIGAGCCATGACTGTGCCACTGTACTICAGC |
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| TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGAGTCTGAA | ATGCATCTTGAAGGAACAGCTGGAAGTCTGGGGGGGGGG | TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCTGCAGGTCATCT | CAGGACCACCTTGAATTCTGCCCTGACACACTGGATTGGAGAGCAGCAGAACCCAGGGC | CTGGAGAGGGACTGCCCTGCACAGCTGCAGCTGCTGGAGCTGGGGGAGAGGTGTTTTTTTT | ### ### ############################## | TGAGACAGCCACAAGTCATGGGTTT | AAATTCAGAAATGTCAAGGCGGGCACGGTGGCTCACCCTGTAATCCCAGCACTTTGGG | ACCCGTCTCTAAAAAATACAAAATTAGCTGGTCACGACCCTGACCGACTGTGGTGGTCATGGTGGTCATGCGTCTGTTGTTCTTGTTGTTGTTGTTGTTGTTGTTGTT |
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| | AATGGTTCTCCCCGGATGAAGCTCTCTAACCAACATCTCGGGGGGCCTACTA 63 AATGGTTCTCCCCGGAATGAAGCTCTCTAATTCAACAACATCTTCAGGCACCTACTA 63 AATGGTTCTCCCCGGAATGAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT 63 TTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAAACATCTCTGGGCTAT 64 [11111111111111111111111111111111111 | 6421 TCTCAGAACCCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAATAAAGAAG 6480 6481 ACCCCATGAGGTCCTAAAGCAGGAGGAAGCAAATGCTTAGGGTGTCAAAGGAAG 6540 111111111111111111111111111111111111 | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT | 6841 TCACTGGGGGTGTCATTGAAGGATCCTAAGAAAGGAGGACCACGATCTCCCTTATATGGTG 6900 | 7021 GTGAATGAGGAAATAAGGAAGAGAGAGAGAGTGCTCTAGGTTTGTGATGCCT 7080 |
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7980 8040 8040 8100 8160 7920 7740 7740 7800 7800 7860 7920 7320 7380 7440 7500 7500 7560 7620 7620 7680 7680 ACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA 7200 TGAAGAATCACAATAATTTTCTACCTGGTCTCTCTGTTGTTGTGATAATGAAA PAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA ACTGCATGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT GGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC CTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG GAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG TGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGAATGGAAGAG TACAGATTTGCAAAGTTTAAATGGTGCCTTCATTTGGGATGCTACTCAAGTAT TAAATGAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC CTATGTCATTTCATTTCCTATTTTGGAAGAGGACTCCTTAAATTTGGGGGA CAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCCT TCTCTCTGTGTTACCCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC CCCAGAAAAAGCATCATGGCTATCTGGGGTAGTATGATGGGTGTTTTTAGC TGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA AACTCCTTGATTTTAGCCTTCTCTGTTCATTTCCTCAAAAAGATTTCCCCAT

| GAGG 8340 GAGG 8340 | | GTA 8460 11 GTA 8460 | .ccg 8520 ccg 8520 | GAA 8580 11 GAA 8580 | CAT 8640 CAT 8640 | GTC 8700 GTC 8700 | TCA 8760 1 TCA 8760 | GGC 8820 GGC 8820 | TTC 8880 TTC 8880 | GTG 8940 GTG 8940 | AAAAAA 9000 aaaaaa 9000 | TTCA 9060 TTCA 9060 | GAT 9120 GAT 9120 | CCA 9180 CCA 9180 | AGA 9240 AGA 9240 | GCC 9300 GCC 9300 | AA 936 1 AA 936 |
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| AATGCCATGAACCCAG | CCTAGGTGACAGAGT | saaaaaaaaggaagtgaa saaaaaaagaagtgaa | AAACTCAGTCAATCTGA AAACTCAGTCAATCTGA | atgcctagaataaataga | TGAGTGAGCTTGAATCA TGAGTGAGCTTGAATCA | GTCATGTTTCCTTTAAAA(| GTTGCTCTTTGGCAT | AGCTAGTGGCCCTGCTG | CAGAACTCTGGTGGTAT | ATAATGGAAGCCACCAA(| GTTCCGGTGCACATTAAA | AAATCAGTTCACCATGT | CTGGAGTGCAATGGCAT | rctccrgrcrcAgccrc | AATTTTTGTATTTTTAGT | rctgactcgrgatcc rctgactcgrgatco | ACCCTGCCCAGCCGT |
| GAAGGCTGAGGCAGGAG, | TGCGCCACTGCACTCCAGG | aaaaataaaaaatgaa | TGATAGAACAGGTTTC. TGATAGAACAGGTTTC. | CATTCAGTAGTTTAG | CTCATTGTGTTTCTTC' | AACTGATCCTCAGCT | ACTCCCTTGCTCCTCT | TGTAATTGGTGGGGAC. TGTAATTGGTGGGGAC. | CCAGTGCCTCTGGAGT | CTCATTTTGAGATGGT | CATGGAGCCACTGGG | TTGCTAGATTCTGGG | 3ACTCTATTGCCCAGG | CCCAGGTTCAAGCGATTC | CACCATGCCCGGCT | AGGCTGGTCTCGAACTCT | ATTACAGGTGTGAG ATTACAGGTGTGAG |
| STAGTCCCAGCTACTCGC | TTGCAGTGAGCCGAGTT | CTCAAAAAATAAAATE | TCTCATAGTTTGTCAG TCTCATAGTTTGTCAG | ACATCTCAGACCACCACTA(| AGATGGCTCTTCTCTTGT | BACAGCAGAAAACAACC | GGAAGGTCCTGGAATGTG | rggaccctacgcaaggac; | ACGGTGTCCTCCCTAGG | GAAGTGGAGTAAGCTCT | AGATGCCCAGGTCCTTC | AACCAGGACATTCAGGAA: | CTTTTTTTTTTTTTGA(| CACTGTAACCTCTGCCT(| 'GGGATTACAGGCGTGCACC | TTTCACCATGTTGGCC TTTCACCATGTTGGCC | GCCTCCCAAAGTGCTGA |
| ACGCCTG | CAGAGCT CAGAGCT | CTCCATC [111111 CTCCATC | TAGAGTA TAGAGTA | TTTGATA TTTGATA | GGAAGGA GGAAGGA | GAAGGGG GAAGGGG | CCTGAAG CCTGAAG | TTTCTTT TTTCTTT | TTCACAC TTCACAC | CCTCAAT CCTCAAT | GCTTAGA(GCTTAGA(| AAAATCT AAAATCT | AAAGAGT AAAGAGT | CTCGGCT(CTCGGCT(| AGTAGCTGG | GACAGGG GACAGGG | TGCCTCG TGCCTCG |
| 8281 | 8341 | 8401 | 8461 | 8521 | 8581 8581 | 8641 | 8701 8701 | 8761 8761 | 8821 | 8881 | 8941 | 9001 | 9061 | 9121 | 9181 | 9241 | 9301 |
| oy Dp | Oy Dp | Oy Dp | Qy Db | Oy Dp | Qy Dp | Oy Dp | Oy Dp | Qy Dp | Qy Pp | Qy Dp | Qy Dp | Qy Dp | Qy Dp | Oy Dp | Oy Op | Q Q | g ç |

10080 10140 10200 10440 10080 10140 10200 10260 10260 10320 9420 9480 9540 9600 0996 9660 9720 9720 9780 9780 9840 9840 0066 0066 0966 0966 AGAGTCTTAATATATATATCCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT **ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTAGCAAAGATATCTCATCTTCTT** TTAAACCATTTTTTTTTTTGTGGTTAGAAAAGTTATGTAGAAAAAAGTAAAATGTGATTT TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC CATTCTGAAAGCATATGACAAATTATTTCTCTTTAATATCTTACTATACTGAAAGCAGA CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCCT GGGTGACACCTGGTGGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG 10441 CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA AGGTAAGCATITGTTTTATATTGGTTTTTTTTTCACCTGGGCTGAGATTTCAAGAAACACC 9721 9361 9421 9421 9481 9481 9541 9541 9601 9601 1996 9721 9781 9841 9841 9901 9961 10141 9361 9661 9901 9961 10081 10201 10201 10261 9781 10081 10141 10261 10321 10381 10021 10021 10321 10381 QQ g g Op Óλ QΥ ò Db Dp οy Dp Db οy οy δ Ω qq Ω Q ΩŽ q ò g δλ g δ Q Qγ qq ò q δy g CC δy ò

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CTATTIGAATIGCIGGAATCACAGGCCATIGCIGAGCIGCCIGAACTGGGAACACAAACA 10620
                                                                                                  AAGGAAAACCAACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC
                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Kronmal, Gregory S.
APPLICANT: Kronmal, Gregory S.
APPLICANT: Lauer, Peter M.
APPLICANT: Lauer, Peter M.
APPLICANT: Thomas, Winston
APPLICANT: Thomas, Winston
APPLICANT: Truchihashi, Zenta
APPLICANT: Truchihashi, Zenta
APPLICANT: Wolff, Roger K.
TITLE OF INVENTION: Sequences and Antibodies Thereto
NUMBER OF SEQUENCES:
CORRESPONDENCE ADDRESS:
ADDRESSEE: TOWNSEND and TOWNSEND and CREW LLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CORFRAING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION DATA:
APPLICATION NUMBER: US/08/724,394A
FILING DATE: 01-OCT-1996
CLASSIFICATION: 536
ATTORNEY/AGENT INFORMATION:
NAME: Fitts, Renee A.
REGISTRATION NUMBER: 35,136
REGISTRATION NUMBER: 35,136
TELECOMMULICATION INFORMATION:
TELECOMMULICATION INFORMATION:
TELECOMMULICATION: 415-576-0200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE: TOWNSEND and TOWNSEND and CALM STREET: Two Embarcadero Center, 8th Floor CITY: San Francisco
                                                                                                                                                                                                                                                                                                     10801 TAAAATCCCCAAATTTTTCATAAAC 10825
                                                                                                                                                                                                                                                                                     10801 TAAAATCCCCAAATTTTTCATAAAC 10825
                                                                                                                                                                                                                                                                                                                                                                          Sequence 20, Application US/08724394A Patent No. 5872237 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SS: not relevant
not relevant
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INFORMATION FOR SEQ ID NO: 20:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 246240 base pairs
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STATE:
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        61 AATAICTAAAGTICAGAICAGAACAITIGGGAAGCIACTITCCCCAAICAACAACACACCCT
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                                                                                                                                                                                             Length 246240;
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; FEATURE:
; NAMEKEY: misc_feature
; LOCATION: 1..246240
; OTHER INFORMATION: /note= "HLA-H.CONTIG"
US-08-724-394A-20
                                                                                                                                                                                          Score 10823;
                                                                                                                                                                                                                          Pred. No. 0;
                                                                                                                                                                                       Query Match
Best Local Similarity 100.0%;
Matches 10823; Conservative
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| 193263 1020 193323 | 1080 193383 | 1140 193443 | 1200 193503 | 1260 193563 | 1320 193623 | 1380 193683 | 1440 193743 | 1500 193803 | 1560 193863 | 1620 193923 | 1680 193983 | 1740 194043 | 1800 194103 | 1860 194163 | 1920 194223 | 1980 194283 | 2040 194343 |
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| AAAGAGTGGCGTTGGGGA GGTGGAGGTCTCTAGGGT | CTTGGCAATTGTTCTTTT | GAACAATTCTCTTTTCGG | CTCTCTACAAAGTACTGA | ATATCTGATCTTATTTGA | ITTTACTAGAAGTTAACT | AAATAATCTGGTTTTCTG | AGTGATTTTGCCCTGTAG | GCACTTTGAGTTTTGGTA | GGCACGGCCTGCTTCCTGG | ATGTCTCCACTTCATAGC | PATAAATTTCATGTTGAGCAG | GTTGCACTGTTCAAGCCC | TTGCATTCTAGTGGGAGA | AAATCATGGGTGTTGTGA | GAGCAGACATGAAGGA | CTGAGTGGGCCTGGCAAG | GTGTGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG |
| CGTTGGCGGTGGGGGCGCGA CCACTTTGGTGAGACCTGGG | TTCGGGCCTTTCCCCACT | AGTTTGAACGTTTGAACTC | GTGCTGTGTAATTAAGAGGC | ACTCACTTCTAAGTTACATTCATA | GGAGCTAATAATACGTTTAT' | TTCAGGTTACAAGAACATAAATC: | GCTTCTAATCTTAGTTGACAGT | CACACGCCGCCTCAGCACAG(| TACACATGACAAGAATGAGGCATG | GCTTTGGTGGCAGAGCTC | CATTAGAGGTTGAAI | GTAAATGAGTCCCAGCCATGT(| GTCTTTACCCTTTGATATT | GAAAGATATACAACATCAGGI | CACTCTGGGGCTGACACTTGAGC | GCAGTATTCCCAGGCAAACT | CAGCACTACTCATGTGTGT |
| TTCCACCTCAGAACGAATG GAATTCTTCACCATTCCAC | GAGGCTCCTGAGAGAGGCCTAC(| CTGGAAAATTAAGTATATGTT | CTTTATTGATTTGCAAI | AATGAACATGTAAGCAATGCAC' | TTTCACTAGGCATAGGGAGGTA | GAATTCAGATTATATAACTCTT | GTTATTTCAAGTACTACAGCTG | AGCACAGTGTTCTGTGGGT | ACGTGTATCCACATTTTACAC | ATTTATTCAATGGTACACTG(| IGATICITAAACAICACACIG | AAATATTCATTGTTTACAAGTGT | AAGGGAGAGCAGGGAAACAAG] | GACAATAAGCAAATGAGC/ | AAGCAGAGAAGTCAGGGCAAGT(| TAAGAATGATATTGACTGGGA | GGATTAAAAGCGGGTTTTCT |
| 3204 GGT 961 TCT 111 | 1021 GG | 1081 GCC 93384 GCC | 1141 CTAGG(93444 CTAGG | 1201 TAZ 93504 TAZ | 1261 TT 93564 TT | 1321 GG/ 93624 GG/ | 1381 ATC | 1441 TGT 3744 TGT | 1501 CT | 1561 CAAA1 93864 CAAA1 | 1621 TAT 93924 TAT | 1681 93984 | 1741 C 94044 C | 1801 GAT | 1861 G | 1921 AA | 1981 TT |
| 0y 0b 19 | 0y Db 19 | Qy Db 19 | 0y 0b 15 | 0y Db 19 | Qy Db 19 | 0y Db 19 | 0y 0b 1 | 0y 0b 19 | Oy Db 1 | Oy Db 1 | Qy Db 1 | Oy Db 1 | 0y Db 1 | Qy Db 1 | Oy Db 1 | Qy Db 1 | 0y Db 1 |

194944 GITCAAGACCAGCCIGGGCAACACAGCAAAACCCCIICITCITCITCITCAAAAAATACAAAAATA 195003 195123 195183 195303 195363 195423 CGGCGTGGGGGTGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT 2100 QY 2341 ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGGAGAATG 2400
Db 194644 ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTGTGGAAAGGAAAGG 194703 194823 194883 194583 194643 2940 2640 2700 3000 3120 2460 2340 195364 CAGTGTAAGAATTCAGGACCAAGGCTGGGACGGTGGCTCACTTCTGTAATCCCAGCACT 195244 TTCTGAGATGGTGAAGGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG 195064 TIGCITGAGCCCAGGAAGTIGAGGCTGCAGGCATGACCTGTGCCACGTACAGCCTAGAGCTACAGC TGACTTTGTTCTTTTTTTTATTTTATTGCCTGAGCAGTGGGGTAATTGGCAATGCCAT 195184 TGACTTGTTCTTTATTTTATTTTATTGGCCTGAGCAGTGGGGTAATTGGCAATGCCAT 2941 TTCTGAGATGGTGAAGGCAGAGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG 195304 GGACATGTTAAGTTTGAGATTCCAGTCAGCTTCCAAGTGGTGAGGCCACATAGGCAGTT 2401 AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG Db 194764 AGGTAGTGGAGTGGGCTGGGTAACAGAAAAGGAGTGACAAACCATTGTCTCCTGAA GTTCAAGACCAGCCTGGGCAACACAGCAAAACCCCTTCTCTACAAAAATACAAAATTA GCTGGGTGTGGTGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTA 195004 GCTGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTA TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC GGACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT CAGTGTAAGAATTCAGGACCAAGGCTGGCACGGTGGCTCACTTCTGTAATCCCAGCACT AGGTAGTGGAGTGGGTGGGAACAGAAAAGGGAGTGACAAACCATTGTCTCCTGAA CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGGAGCAGATTCCTGAGCA AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAAA AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTAATTCTAGCCAAGGAGTA CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACAAAAATGTCTCT 2761 3061 2701 2581 2641 2881 3001 2161 Db 194704 2461 2041 2101 Db 194404 194464 Db 194524 194584 194344 2221 2281 qq ρp QO g qq Dp g δλ Q οy δλ ŏ Qγ g οχ ŏ qq δλ οy g δ $\overset{\circ}{\lambda}$ δy δ δ

| 3121 5424 3181 | TGGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA 3180 | 83 |
|----------------|--|----|
| 84 | 3240 | 43 |
| 4 4 | ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG 3300 | 03 |
| 301 604 | TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT 3360 | 63 |
| 361 664 | CTCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG 3420 | 23 |
| 421 | TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACAC | 83 |
| 481 784 | ATTICIACAATCCACCACCTTIAGIGGAGICIGICIAAICAIGAGIATTGGAATAGGAT 3540 | 43 |
| 541 844 | CTGGGGGCAGTGAGGGGTGGCAGCCACGTGGCAGAAAAGCACACAAGAAAGCGAAAGC 3600 | 03 |
| 601 904 | ACCCAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCCTTCACAAAATGAGGA 3660 | 63 |
| 661 964 | CCAGACACAGCTGATGGTATGAGTGAGGGGGTGTGGGAGCCTCAACATCCTGCTCCC 3720 | 23 |
| 3721 6024 | CTCCTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTCTGCACTA 3780 | 83 |
| 3781 6084 | CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTCCTTGTTTGAAGCTTTGGGCTA 3840 | 43 |
| 841 144 | CGTGGATGACCACTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC 3900 | 03 |
| 901 | TCCATGGGTTTCCAGTACAATTTCAAGCCAGATGTGGCTGCAGCTGAGTCAGGTCTGAA 3960 | 63 |
| 961 264 | AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG 4020 | 23 |
| 324 | CAAGGIATGIGGAGAGGGGCCTCACCITCCIGAGGITGICAGAGGITTICATCITTIC 4080 | 83 |
| 081 384 | ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGAAGAAGGAAG | 43 |
| 141 | GAATITGCTICCTGAGAICAITIGGICCITGGGGAIGGIGGAAATAGGGACCTAITCCTT 4200 | |
| 201 | TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACACCCTGCAGGTCATCCTG 4260 | |

196804 GACCAACAAGGTATGGTGGAAACACATTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG 196863 Db 196984 TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAGGGAA 197043 Db 197164 AGGCCGAGGCGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA 197223 197343 196623 196803 197163 197283 197403 197523 5160 5340 4440 4620 4680 4800 5100 Db 196684 TGGCCCACCAAGCTGGAGTGGGAAAGCCACAAGATTCGGGCCAGGAGAACAGGGCCTAC AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAAA 5101 AAAAAAAAAAAAAAAAAAAAAATTCAGAGATCTCAGCTATCATATGAATACCAGGACAAA CTCCTAGGTTGACCCAGGTGAAACTGACCATCTGTATTCAATCATTTCAATGCACATAA GGCTGTGAAATGCAAGAAGACAACAGTACCGAGGGCTACTGGAAGTACGGGTATGATGGG CTGGAGAGGGACTGCCCTGCACAGCTGCAGCAGTTGCTGGAGCTGGGGGAGAGGTGTTTTG TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA GTGTCTATGGCCCTTGCTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA 4801 AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG 4921 ACCCGTCTCTAAAAAAAAAAAATTAGCTGGTCACAGTCATGCGCACCTGTAGTCCCCA GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA AGAACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC TGGCCCACCAAGCTGGAAAAGGCACAAAATTCGGGCCAGGAACAGGGCCTAC GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATATGGCTCAAAGGGAA AGGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA 4441 5041 5281 4261 4321 4381 4501 4681 4861 5221 196504 Db 196624 196744 4561 Db 196864 4621 Db 196924 4741 Db 197044 Db 197104 Db 197224 4981 Db 197284 Db 197344 Db 197404 197524 196564 a g δ QQ QΥ à ÓΥ δλ δŏ δ δy οy δλ ò ò δy ô δ

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|--------------------------------|--|--|---|---|--|--|--|---|--|--|--|--|---|--|--|--|---|---|
| 197643 | 5400 197703 | 5460 197763 | 5520 197823 | 5580 197883 | 5640 197943 | 5700 198003 | 5760 198063 | 5820 198123 | 5880 198183 | 5940 198243 | 6000 198303 | 6060 198363 | 6120 198423 | 6180 198483 | 6240 198543 | 6300 198603 | 6360 198663 | 6420 198723 |
| ttgacccaggtgaaactgaccatctgtatt | AGGGCAATTTTATCTATCAGAACAAAGAACATGGGTAACAGATATGTATTTACATGTG | AGGAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG | ACACAAAATGGTGTCTCCTGTAGCTTGTTTTTTTCTGAAAAGGGTATTTCCTCCTCC | AACCTATAGAAGGAAGTGAAAGTTCCAGCCAGGCAAGGGTAAACAGATCCCTCTC | CTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC | TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG | AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGAGGTATTG | CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG | CAGAGATATACGTNCCAGGTGGAGCACCCAGGCTGGATCAGCCCTCATTGTGATCTGG | GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGTTGAGAGGGGGC | TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAGG | GTGGCAATCAAAGGCTTTAACTTGCTTTTTCTGTTTTAGAGCCCTCACCGTCTGGCACCC | TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTGTCGTCATCTTGTTCATTGGAATTT | TGTICATAATATAAGGAAGAGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTCT | TAGTACCTCTGCCCCAGGCCACAGTGGGAAGAGGGCCAGAGGGGATCTGGCATCCATGGG | AAGCATTTTTCTCATTTATATTCTTTGGGACACCAGCAGCTCCCTGGGAGACAGAAAT | AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAAACA | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT |
| 197584 | 5341 | 5401 197704 | 5461 197764 | 5521 197824 | 5581 197884 | 5641 197944 | 5701 198004 | 5761 198064 | 5821 198124 | 5881 198184 | 5941 | 6001 198304 | 6061 198364 | 6121 198424 | 6181 198484 | 6241 198544 | 6301 198604 | 6361 198664 |
| qq | QY Db | QY Dp | Qy Db | Oy Dp | Oy Db | Oy Op | Oy Op | Qy Db | oy op | oy og | Oy Dp | Qy Db | Qy Db | Oy Db | ç d | Oy Db | O.y D.b | Oy Op |

Db 198724 TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAAATTAAGTAAATGAAAGTAAAAGGAAG 198783 199743 198903 199143 199203 199323 199383 199443 199563 7200 Db 198844 ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA Db 199384 CTTCCTGGGTCTCTTGTCTCCACAGGAGCCATGGGGCACTACGTCTTAGCTGAACG TCTCAGAACCCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG **ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG** ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTAGGGAAAGA GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA **AATGTGTTGTTAAGAAGTTAGATGAGAGGTGAGAGACCAGTTAGAAAGCCAATAAGCAT** TTCCAGATGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG GTGAATGAGGAAAATAAGGAAGAAGAGAGAGGCAAGATGGTGCCTAGGTTTGTGATGCCT CITICCIGGGICTCITGICICCACAGGAGGAGCCAIGGGGCACIACGICITAGCIGAACG TGAGTGACACGCAGCCTGCAGACTCACTGTGGGAAGGAGACAAAACTAGAGACTCAAAGA GGGAGTGCATTTATGAGCTCTTCATGTTTCAGGAGAGAGTTGAACCTAAACATAGAAATT TTAGGTTTCTGAGTTCCTGCATGCCGGTGATCCCTAGCTGTGACCTCTCCCCTGGAACTG TCTCTCATGAACCTCAAGCTGCATCTAGAGGCTTCCTTCATTTCCTCCGTCACCTCAGAG GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT 6421 6481 6541 6601 6661 6721 6781 Db 199084 6901 6961 7021 7081 7141 7261 7321 198784 Db 198964 199024 Db 199264 Db 199324 Db 199444 Db 199564 Db 198904 7201 Db 199504 Db 199624 7381 Db 199684 Dp õ õ á ò ŏ ò qq δý ô ò δý Qγ ŏ δy QΫ́ ŏ ά

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| 7560 199863 | 7620 199923 | 7680 199983 | 7740 200043 | 7800 200103 | 7860 200163 | 7920 200223 | 7980 200283 | 8040 200343 | 8100 200403 | 8160 200463 | 8220 200523 | 8280 200583 | 8340 200643 | 8400 200703 | 8460 200763 | 8520 200823 | 8580 200883 | 8640 |
|---|--|--|---|--|---|--|--|--|--|--|--|---|---|---|--|---|---|------------------------------|
| CTTACATGATTCATTTTAACATCTGAGAAAGCTTTGAACCCTGGGACGTGGCTAGTCAT | AACCTTACCAGATTTTTACACATGTATCTATGCATTTTCTGGACCCGTTCAACTTTTCTT | TTGAATCCTCTCTGTGTTACCCAGTAACTCATCTGTCACCAAGCCTTGGGGATTCTTC | CATCTGATTGTGATGTGAGTTGCACAGCTATGAAGGCTGTACACTGCACGATGGAAGGGTGTACACTGCATGGAATGGAAGGCTACACTGTGAGTTGCACTTGCACGTATGAAGGCTGTACACTGCACGAATGGAAGAG | GCACCTGTCCCAGAAAAAGCAFCATGGCTATCTGTGGGTAGTATGATGGGTGTTTTTAGC | AGGTAGGAGGCAATATCTTGAAAGGGGTTGTGAAGAGGTGTTTTTTCTAATTGGCATGA | AGGTGTCATACAGATTTGCAAAGTTTAATGGTGCCTTCATTTGGGATGCTACTCTAGTAT | TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA | ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTAA | CATGCATTACTGCACTTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT | TTCTTTTTTAAATGAAGAGAGAGAGGGAGGGCGGGCACGGTGGCTCACGCCTGTAATCCC | AGCACITIGGGAGGCCAAAGCGGGGGGGGCAGGGGCAGGAGATCGAGACCTGGC | TAACATGGTGAAACCCCATCTCTAATAAAATACAAAAATTAGCTGGCGTGGTGGCGG | ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGAGAAATGGCATGAACCCAGGAGG | CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACTGAGTGAG | CTCCATCTCAAAAAAATAAAAATAAAAATAAAAATGAAAAAAAA | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGATCTGACGG | TTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | TCTTCTCTTGTCTCATTGTGTTTCTTCT |
| 7501 199804 | 7561 199864 | 7621 199924 | 7681 199984 | 7741 | 7801 | 7861 200164 | 7921 | 7981 | 8041 | 8101 | 8161 | 8221 200524 | 8281 200584 | 8341 | 8401 | 8461 | 8521 200824 | 85 |
| Òỳ Dp | Oy Dp | QY Db | Qy | Qy Dp | QY GD | Qy Dp | Qy Db | Oy Dp | Qy dq | 95 dg | QY Db | QY | 9. 9. | Qy Db | Qy Db | Qy Dp | Qy Db | ÓΥ |

201543 201843 201903 201003 201423 201603 201663 201783 200943 201303 201123 9240 9360 9420 9480 9540 9720 8940 0906 9180 9300 ACGCTCATTGTAGAAAAGCTATAAAATGAATACAATTAAAAGCTGTTATTTAATTAGCCAG AAAATCTAACCAGGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCACATGTTCACATGTTCACATGTTCAGGAAATCTAACCAGGACATTCAGGAAATTGCTAGATTCTGGGAAATCTAACCAGGACATTCAGGAAATTGCTAGATTCTGGGAAATCAGGAAATTCAGGAAATTCA GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA AGTAGCTGGGATTACAGGCGTGCACCACCATGCCGGGCTAATTTTTGTATTTTTAGTAGA TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA AGAGTCTTAATATATATACCAGATGGCATGTGTTTTACTTTATGTTACTACATGCACTTG GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGGCAGGTGCTTCAGGATACCATAT **ACAGCTCAGAAGTTTCTTCTTTAGGCATTAAATTTTTAGCAAAGATATCTCATCTTCTTT** CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCTCTGTTGCTCTCTTTGGCATTG CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG AAAGAGTCTTTTTTTTTTTTGAGACTCTATTGCCCAGGCTGGAGTGCAATGGCATGAT CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA GACAGGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCTCCTGACCTCGTGATCCGCC GAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGGTGTCATGTTTCCTTTAAAAGTC CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCATTCA TITCITIGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC 9181 9241 9361 9421 9481 9541 9601 8941 9061 201544 9301 1996 8641 8761 9001 201304 201364 9121 201664 201784 201844 201904 8701 8821 8881 201424 201484 201604 201724 200884 200944 201004 201064 201124 201184 201244 Q g 셤 g g 염 g qq g q δy δ δ δy ŏ QΥ 合 Dp qq QQ g $^{\circ}$ g δλ q ŏ g ŏ ŏ δ Qγ ò ŏ ŏ δ Qγ

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201964 TGAAAAACTATTAACAACTTGTCTATTACCTGTTAGTATTATTGTTGCATTAAAAATGCA 202023
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                                                                                        202144 CTTTACATTTTGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGT
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                                                                                                                                                                                            202204 TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAC
                                                                                                                                                                                                                                                                                   AGGTAAGCATTTGTTTTATATTGGTTTTATTTCACCTGGGCTGAGATTTCAAGAAACACC
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                                       202024 TATACTITAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC
                                                                                                                                                                                TCTTCACTCTAGGGACATTGTCGTCTAAGTTGTAAGACATTGGTTATTTTACCAGCAAAC
                                                                                                                              CITTACATTITGICITACGGAATATTITCATTCAACTGIGGIAGCCGAATTAATCGIGIT
                          TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC
                                                                           ATCTIGIGIATATACTTAATCGCTTTGTCATTTTGGAGACATTTATTTTGCTTCTAATTT
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DD 192424 TCAGGATTTAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Db 192364 AATATCTAAAGTTCAGATCAGAACATTGCGAAGCTACTTTCCCCAATCAACAACACCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121 TCAGGATTTAAAAACCAAGGGGACACTGGATCACCTAGTGTTTCACAAGCAGGTACCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 TCTAAGGTTGAGATAAAATTTTAAAATGTATGAATTTTTGAAAAATCATAAATATTTA
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                                                                                                                                                                                                                                                                                                                                                 Megabase Transcript Map: No. 5872237el
Sequences and Antibodies Thereto
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OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
AURIENT APPLICATION NUMBER: US/08/724,394A
FILING DATE: 01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                     \Gamma_{\rm LLP}
                                                                                                                                                                                                                                                                                                                                                                                                            T: TWO Embarcadero Center, 8th Floor San Francisco
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               Db 203104 TAAAATCCCCAAATTTTTCATAAAC 203128
                                                                                                                                     Sequence 21, Application US/08724394A Patent No. 5872237
                                                                                                                                                                                                APPLICANT: Feder, John N.
APPLICANT: Kronmal, Gregory S.
APPLICANT: Lauer, Peter M.
APPLICANT: Ruddy, David A.
APPLICANT: Thomas, Winston
APPLICANT: Tsuchinashi, Zenta
APPLICANT: Tsuchinashi, Zenta
APPLICANT: Wolff, Roger K.
TITLE OF INVENTION: Megabase Tra
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ATTORNEY/AGENT INFORMATION:
NAME: Fitte. Renee A.
REGISTRATION NUMBER: 55,136
REFERENCE/DOCKET NUMBER: 0179
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415.576-0200
TAAAATCCCCAAATTTTTCATAAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S: not relevant
not relevant
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LOGATION: 1..246240
GTHER INFORMATION: /note-
US-08-724-394A-21
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 246240 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COUNTRY: USA
ZIP: 94111-3834
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
ADDRESSEE: TOWNSEND and
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Best Local Similarity 100.0
Matches 10823; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQUENCES:
                                                                                                                                                                ; Patent No. 5872237
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ropology:
                                                                                                                        US-08-724-394A-21
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|---|--------|---|---|--|---|--|---|---|--|--|--|---|--|---|---|---|--|--|
| CTGCTGTAGGAGAGAAGTAAAGTTCTGAAAGACCTGTTGCTTTTCACCAGGAAGT | | TTACTGGGCATCTCCTAGCCTAGCAATAGCTGTAGGGTGACTTCTGGAGCCATCCCG | TTTCCCGGCCCCCAAAAGAAGGGGAGTTTAACGGGGACGTGCGGCCAGAGCTGGGGAAA | ATGGGCCGCGGGGCCGCGCTTCTCCTGCTGTTTTGCAGACCGCGGTCCTG | CAGGGCGCTTGCTGCGTGAGTCCGAGGCTGCGGGCGAACTAGGGGCGCGGGGGGGTG | GAAAAATCGAAACTAGCTTTTTCTTTGCGCTTGGGAGTTTGCTAACTTTGGAGGACCTGC | TCAACCCTATCCGCAAGCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGC | CTACCACTGAACTGCAGATAGGGGTCCCTGGCCCCAGGACCTGCCCCCTCCCCGGGTGT | CCCGGCTCTGCGGAGTGACTTTTGGAACCGCCCACTCCCTTCCCCCAACTAGAATGCTTT | . TABATAAATCTCGTAGTTCCTCACTTGAGCTGAGCTAAGCCTGGGGCTCCTTGAACCTGG | . AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG | . AAGTTCTTCCCTGAGTGCTTGCCGAGAAGGCTGAGCAAACCCACAGGAGGTCCGCACGG | . GGTTTCCACCTCAGAACGAATGCGTTGGGCGCGGGGGCGCGGAAAGAGTGGCGTTGGGGA | . TCTGAATTCTTCACCATTCCACCTTTTGGTGAGACCTGGGGTGGAGGTCTCTAGGGT | GGGAGGCTCCTGAGAGGCCTACCTCGGCCTTTCCCCACTCTTGGCAATTGTTCTTTT | GCCTGGAAAATTAAGTATATGTTAGTTGAACGTTTGAACTGAACAATTGTGTTTGGG | CTAGGCTTTATTGATTTGCAATGTGCTGTGTAATTAAGAGGCCTCTCTACAAAGTACTGA | TAATGAACATGTAAGCAATGCACTCAACTTACATTCATATCTGATCTTATTTGA |
| 181 | 00 | 241 192544 | 301 | 361 192664 | 421 192724 | 481 192784 | 541 192844 | 601 192904 | 661 192964 | 721 193024 | 781 193084 | 841 193144 | 901 193204 | 961 193264 | 1021 193324 | 1081 193384 | 1141 | 1201 193504 |
| , Q | g G | QY Db | QY Db | QY Db | QY Db | Qy Db | QY Db | OY DP | QY | Qy Db | QY | QY Db | Oy Dp | QY Dp | Q D | Qy Db | Oy Dp | Qy Db |

| Q7 Op | 12 1935 | TTTTCACTAGGCATAGGGAGGTAGGAGCTAATAATACGTTTATTTTACTAGAAGTTAACTTTACTAGTTAACTTTAACTTTACTAGAAGTTAACTTTTTCACTAGAGGTAGGAGGTAGGAGCTAATAATAATACGTTTTATTTTACTAGAAGTTAACTTAACT | 1320 193623 |
|----------|--------------------|---|----------------|
| QY Db | 132 | GAATTCAGATTATAAACTCTTTTCAGGTTACAAAAAAAAA | 1380 193683 |
| QY Db | 19 | ADGITATITICAAGTACTACAGCTGCTTCTAATCTTAGTTGACAGTGATTTTGCCCTGTAG | 1440 193743 |
| Qy Dp | 193 | ACGCCGCCTCAGCACAGCACTTTGAGTTTTGGTA | 1500 |
| Qy Db | 150 | SCTGTATCCACATTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG | 1560 193863 |
| QY DP | 15 1938 | CAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC | 1620 193923 |
| Qy Db | 16 | TATGATICTIAAACAICACACTGCATTAGAGGTTGAATAATAAATTICATGTTGAGCAG [| 1680 193983 |
| Qy Db | 1 | AAATATTCATTGTTACAAGTGTAAATGAGTCCCAGCCATGTGTGCACTGTTCAAGCCC | 1740 |
| Qy Db | | TTGCATTCTAGTGGGAGA | 1800 |
| Qy Db | 1 194 | atatacaacatcaggaaatcatgggtgtgtgg | 1860 194163 |
| çy D | | GGCTGACACTTGAGCAGACATGAAGGA | 1920 194223 |
| Oy Dp | | ACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAAG | 1980 194283 |
| Qy | 1942 | 3ATTAAAAGGGGTTTTCTCAGCACTACTCATGTGTGTGTGT | 2040 |
| QY | 13 | 3CGTGGGGGTGGGAAGGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCTGT | 2100 |
| Qy | 210 | CCTACTUACTAGGTGCTAGGAGCACTCCCCCAGTCTTGACAACGAAAAATGTCTCT | 2160 |
| QY Db | 216 | TITTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAA | 2220 |
| QY | 22 | CCAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGCTCAGAAGAGA | 2280 194583 |
| Qy | y 2281 0 194584 | GCCACAAACAAGGTIGTGCAGGCGCCTGTAGGCTGTGGATGAATTCTAGCCAAGGAGTA | 2340 |
| δy | 234 | ACAGTGATCTGTCACAGGCTTTTAAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | 2400 |

| 03 | 63 | 23 | 83 | 43 | 03 | 63 | 23 | 83 | 43 | 03 | 63 | 23 | 0 483 | 0 543 | 0 | 0 | 0 723 | 0 |
|--------|---|--|---|---|--|--|--|--|---|---|---|---|--|---|---|--|---|---|
| 1947 | 2460 1947 | 2520 1948: | 2580 1948 | 2640 1949 | 2700 1950 | 2760 1950 | 2820 1951 | 2880 1951 | 2940 1952 | 3000 1953 | 3060 1953 | 3120 1954 | 318 | 324 | G 330(G 1956 | 336 195 | 342 195 | 348 |
| | AAGGGAGCAACAGTAAAAGCAGGGAGCCCAGCAGGAAGCTGTTACACAGTCCAGGCAAG | aggtagtggagtgggctgggtgggaacagaaaagggagtgacaaaccattgtctcctgaa | TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAAGAGAAATTGG | CTGGGTGTAGTAGCTCATGCCAAGGAGGAGGCCAAGGAGGAGGAGATTCCTGAGCTCAGGA | GTTCAAGACCAGCCTGGGCAACACACAAAACCCCTTCTCTACAAAAATACAAAAATTA | GCTGGGTGTGGTGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTA | TIGCTIGAGCCCAGGAAGTIGAGGCTGCAGTGAGCCAIGACTGTGCCACTGTACTTCAGC | CTAGGTGACAGAGGAGGACCTGTCTCCCCTGACCCCCTGAAAAGAGAAGAGTTAAAGT | TGACTITGTICITIATITIAATITIATIGGCCTGAGCAGTGGGGTAATIGGCCAT | TTCTGAGATGGTGAAGGCAGGGAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG | GGACATGTTAAGTTTGAGATTCCAGTCAGCTTCCAAGTGGTGAGGCCACATAGGCAGTT | CAGTGTAAGAATTCAGGACCAAGGCTGGCACGGTGGCTCACTTCTGTAATCCCAGCACT | TIGGIGGCIGAGGIAGGIAGAICAITIGAGGICAGGAGITIGAGACAAGGITGGCCAACA | TGGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCT | ATAGTCCCAGGTTTTCAGGAGGCTTAGGTAGGAANCCCTTGAACCCAGGAGGTGCAG | TTGCAGTGAGCTGAGATTGTGCCACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT | CTCAAAAAAAAAAAAAAAAAAAAAAAAAACTGAAGGAATTATTCCTCAGGATTTGGG | TCTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACACTTAAC |
| 194644 | 2401 | 2461 194764 | 2521 | 2581 | 2641 | 2701 | 2761 195064 | 2821 | 2881 | 2941 195244 | 3001 | 3061 195364 | 3121 195424 | 3181 195484 | 3241 195544 | 3301 195604 | 3361 195664 | 3421 |
| C qa | OY Db | Qy Db | Qy Dp | do Op | Oy Db | QQ Dp | Qy Dp | Oy Db | Qy Dp | Qy Db | Qy | Qy Db | Qy Db | Qy Db | Qy Db | Qy Db | oy Op | Oy |

| ACCTTAAC 195783 | AATAGGAT 3540 | 3600 | 195 | .AAAATGAGGA 3000 :AAAATGAGGA 195963 | 720 | 3CC 196 | CTGCACTA 3780 | מרשכוש בסחסם | TIGGGCTA 3840 TIGGGCTA 196143 | CCCCGAAC 3900 CCCCGAAC 196203 | AGTCTGAA 3960 | AGTCTG | AACCACAG 4020 AACCACAG 196323 | ATCTTTTC 4 | 🛏 | AAGAGGGAAG 4140 | 12011 110111 4200 | 96 | TCATCCTG 4260 | TCATCCT | ATGATGGG 4320 | CCAGGGCC 4380 | ccagggcc 196 | AGGGCCTAC 4440 | GTGTTTG 4500 | GAGTGGAGG 4560 | |
|------------------|---------------------------------|--------------------------|----------------|--|------------------|----------------|-----------------|----------------|---|--|-----------------|-------------------|---|-----------------|------------------|---------------------|----------------------|--------------------------------|---------------|-----------------|------------------------------|------------------|----------------|-------------------------------|----------------------|-----------------|---|
| ACCATGGCTAGACACA | aatcatgagtattgg | AGAGAAAGCACACAAGGAAAGAGC | AAAAGG | AACTCACCCTTCACAAAAACTCACCCTTCACAAAAACTCACCCTTCACCAAAAAA | GTGGAGCCTCAACATC | SGAGCCTCAACATC | CCAGGTTCACACTCT | Aggi Icacacici | CCTTGTTTGAAGCT | AGTCGCCGTGTGGAG(| CTGCAGCTGAGTCAG | CTGCAGCTGAGTC | ATTATGGAAAATCAC ATTATGGAAAATCAC | TTGTCAGAGCTTTTC | GITGICAGAGCITIIC | TGTGGGAGCAGGG | | GGTGGAATAGGGACC | () - | CCACACCCTGCAG | TACTGGAAGTACGGGT | TGGAGAGCAGCAGAAC | ggagagcagcagaa | cggccaggcagaac | CTGGAGCTGGGGAGAG | TATACTCTAGTGGCA | |
| TCCTGAGTTCAACT | AGTGGAGTCTGTCT | SCCACGTGTGG | SCCACGTGTGGCA | aaagacaggactgc aaagacaggactgc | rtgatgcaggtgt | rgargcaggrg | CCTGTTGCTCTGTCT | SCI CITO | SAGCAGGACCTTGGTCTTT(| GTTCTATGATNATGAGAGTC GTTCTATGATCATGAGAGTC | A | CAAGCCAGATGTG | GTTGACTTCTGGACTA | CICACCTIC | CTCACCTTCCTGAG | SGAAGTCTGAGGT | SGAAGTCTGAGGTC | TTGGTCCTTGGGGATG | רוֹז - | GGATTTTCCAG | ACAGTACCGAGGCT | rgacaca | CTGACACACTGG | GAAAGGCACAAGATT(| CAGCTGCAGCAGTTG | CACACTTCTGCCC | |
| GCCCTGAGCACCAAC | GAATCCACCAGCTT1/ | AGTGAGGGGGTGGCA | AGTGAGGGGGTGGC | ACTGTCATATGGAAG! | AGCTGATGGTATGAG | AGCTGATGGTATG | TACACATGGTTAAGG | ACACATGGTTA | ATGGGTGCCTCAGAG | SACCAGCTGTTCGT | STITCCAGIAGAAI | GTTTCCAGTAGAATTTC | SATCACATGTTCACT | ATGTGGAGAGGGGGC | ATGTGGAGAGGGGG | TTGAAGGAAACAGCT | TGAAGGAAACAGC | CTTCCTGAGATCAT | AGTTAACAAGGCT | AGTTAACAAGGCTGG | GAAATGCAAGAAGACAA(| FGAATTCT | accircaaricico | ACCAAGCTGGAGTGGC | GGGACTGCCCTGCA | AAGGTATGGTGGAA | |
| TCTAATTT | ATTTTCTA ATTTCTA | 8 = | 30005 | ACCCAGGA | CCAGACAC | -8 | CTCCTACT | CCTAC | CCTCTTC | CGTGGATC CGTGGATC | CCATGG | TCCATGG | AGGGTGG(| | CAAGGGT | ATGCATC | r) (| GAATTTG GAATTTG | E : | TGGTTGC | GGCTGTG GGCTGTG | AGGAC | - (7) | TGGCCCA TGGCCCA | CTGGAGA | ACCAA | |
| 195724 | 3481 | 354 | 84 | 3601 195904 | 3661 | 195964 | 372 | | 3781 196084 | 3841 | 390 | 196204 | 3961 | 402 | 32 | 408 | 38 | 4141 | 4201 | 196504 | 4261 | 4 | 196624 | 4381 | 4441 | 450 | |
| qq | Oy Op | Qγ | Op | Qy | Qy | Db | δλ | g | Qy Dp | Q D | QY | qq | کم ج <u>و</u> | ò | op Op | Ωÿ | අධ | Qy Db | QY | Db | Q d | οy | g | Qy Db | Oy de | 0 | , |

| Qy | 4561 196864 | AGGTTGCAGGGCACGGAATCCCTGGTTGGAGTTTCAGAGGTGGCTGAGGCTGTGTGCCTC | 4620 196923 |
|----------------|----------------|--|-----------------|
| O _Y | 4621 196924 | TCCAAATTCTGGGAAGGGACTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA | 4680 196983 |
| Oy | 4681 | TGAGACAGCCACAAGTCATGGGTTTAATTTCTTCTCCATGCATATGGCTCAAAGGGAA | 4740 |
| Db | 196984 | | 197043 |
| Oy | 4741 | GTGTCTATGGCCCTTGCTTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA | 4800 |
| Db | | | 197103 |
| QQ | 4801 | AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG | 4860 |
| | 197104 | | 197163 |
| Qy | 4861 | AGECCGAGGCGGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA | 4920 |
| | 197164 | | 197223 |
| Qy | 4921 | ACCGTCTCTAAAAAATACAAAAATTAGCTGGTCACAGTCATGCGGCACCTGTAGTCCCA | 4980 |
| Db | 197224 | | 197283 |
| Qy | 4981 | GCTAATTGGAAGGCTGAGGCAGGAGCATCGCTTGAACCTGGGAAGCGGAAGTTGCACTGA | 5040 |
| Dp | 197284 | | 197343 |
| Qy | 5041 | GCCAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGAGAG | 5100 |
| Db | 197344 | | 197 4 03 |
| QY | 5101 | AAAAAAAAAAAAAAAAAGAGAATTCAGAGATCTCAGCTATCATGATGATGATGCGGGACAAA | 5160 |
| Dp | 197404 | | 197463 |
| QY | 5161 | AIATCAAGTGAGGCCACTTATCAGAGTAGAACAATCCTTTAGGTTAAAAGTTTCTTTC | 5220 |
| Db | 197464 | | 197523 |
| Qy | 5221 197524 | AGAACATAGCAATAATCACTGAAGCTACCTATCTACAAGTCCGCTTCTTATAACAATGC | 5280 197583 |
| QQ | 5281 | CTCCTAGGTTGACCCAGGTGAACTGACCATCTGTATTCAATCATTTCAATGCACATAA : | 5340 |
| Dp | 197584 | | 197643 |
| QY | 5341 | AGGGCAATTTTATCTATCAGAACAAAGACATGGGTAACAGATATGTATATTTACATGTG : | 5400 |
| Dp | 197644 | | 197703 |
| Qy | 5401 | AGGAGAACAAGCTGATCTGACTGCTCCAAGTGACACTGTGTTAGAGTCCAATCTTAGG : | 5460 |
| Dp | 197704 | | 197763 |
| Qy | 5461 | ACACAAAATGGTGTCTCTCTGTAGCTTGTTTTTTTTCTGAAAAGGGTATTTCCTTCC | 5520 |
| Db | 197764 | | 197823 |
| Qy | 5521 | AACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCCTCTC : | 5580 |
| Db | 197824 | | 197883 |
| Oy | 5581 | CTCATCCTTCTTTCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC (| 5640 |
| Dp | 197884 | | 197943 |

197944 TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG 198003 198123 198183 198243 198483 198543 198303 198423 198663 198723 199023 5760 5940 0909 6120 6180 6240 6300 6360 6420 6540 0999 0099 6720 6721 AGCTATCACTCACCAATTATGCATTTCTACCCCCTGAACATCTGTGGTGTAGGGAAAAGA 6780 198064 CCCAATGGGGATGGGACCTACCAGGCTGGATAACCTTGGCTGTACCCCTGGGGAAGAG 198124 CAGAGATATACGTGCCAGGTGGAGCACCCAGGCTCAGGTCAGCCCCTCATTGTGATCTGG 198244 TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTTTTGTTAGGGGGTGGGCTGAGG 198484 TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGATCTGGCATCCATGGG TCTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG AAGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG CCCAATGGGGATGGGACCTACCAGGGCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAG CAGAGATATACGINCCAGGIGGAGCACCCAGGCCTGGATCAGCCCCTCATIGTGATCTGG GGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGGGGGGTTGAGAGAGTGCC TGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTTTTGTTAGGGGGTGGGCTGAGG GTGGCAATCAAAGGCTTTAACTTGCTTTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC 198364 TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATTGTTGATTGTTGATTG TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT 198904 TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA AAGCATTTTTCTCATTTATATTCTTTGGGGACACCCAGCAGCTCCCTGGGAGACAGAAAT ATCACATTCAGCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGGG TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG **ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG** TTAGGTGAGGTTGAAGATGATGGGAGGTCTACACAGACGGAGCAACCATGCCAAGTAGGA 5701 5821 5881 Db 198004 5761 5941 6001 1909 6181 6301 6361 6421 6481 6541 6241 198544 198604 198664 198784 198844 6601 198724 g g ð δ δλ ò g QΥ g à q δ qq ŏ QQ g ò g ò g Dp δλ qq g Pρ g Ωp δy ò g ŏ QY δ δy δλ δy

| 11 | | | AGGGTCTTTTGGGATATTGGGTTATGA 6840 | GAGGACCACGATCTCCTTATATGGTG 6900 | GAGACCAGTTAGAAAGCCAATAAGCAT 6960 | atagtgcccaggtctaaattgagatgg 7020 . | AAGAIGGIGCCIAGGITIGIGAIGCCI 7080 | CATGGGGCACTACGTCTTAGCTGAACG 7140 | IGGAAGGAGACAAACTAGAGACTCAAAGA 7200 | GAGAGAGTTGAACCTAAACATAGAAATT 7260 | GTTCATTTCCTCAAAAGATTTCCCCAT 7320 | CTAGCTGTGACCTCTCCCTGGAACTG 7380 | TCCTTCATTTCCTCCGTCACCTCAGAG 7440 | GGAAGAGGACTCCTTAAATTTGGGGGA 7500 | TTTGAACCCTGGGACGTGGCTACTCAT 7560 | PATTTCTGGACCCGTTCAACTTTTCCT 7620 | VICTGTCACCAAGCCTTGGGGATTCTTC 7680 | AAGGCTGTACACTGCACGAATGGAAGAG 7740 | STGGGTAGTATGATGGGTGT | GTGGGTAGTGATGATGTTTTAG |
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201184 CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCCACCAAGTG 201243 200883 201123 201183 200643 200763 200823 201063 200523 200583 200463 8460 8700 8820 8880 8280 8400 8100 8160 201064 TITCTTIGGACCCTACGCAAGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGG 201124 TICACACACGGIGICCICCCTAGGCCAGTGCCTCTGGAGTCAGAACICTGGTGGTGTTTC CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG 200284 ATTATGATAAGGATGATAAAGCACTTACTTGTGTGTCCGACTCTTCTGAGCACCTACTTA CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 200644 CAGAGCTTGCAGTGAGCCGAGTTTGCGCCACTGCACTCCAGCCTAGGTGACAGAGTGAGA 8461 TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGTCAATCTGACCG GAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC 200944 GAAGGGGAACAGCAGAAACAACCAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTTTGCTTCTTTGGCATTCA 201004 CCTGAAGGAAGGACCTGGAATGTGACTCCCTTGCTCCTCTTTGGCATTCA TITCITIGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGGC TICACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGTATITC ACGCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG ATTATGATAAGGATGATAAAAGCACTTACTTCGTGTCCGACTCTTCTGAGCACCTACTTA CATGCATTACTGCATTCTTACAATAATTCTATGAGATAGGTACTATTATCCCCAT TCCAGACCTGAAGAATCACAATAATTTTCTACCTGGTCTCTCCTTGTTCTGATAATGAAA TTCTTTTTAAATGAAGAAAGTGAAGTAGGCCGGGCACGGTGGCTCACGCCTGTAATCCC AGCACTTTGGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGGC 8881 8581 8641 8821 8701 200584 8341 8401 200764 8521 200824 8761 8101 8161 8281 7861 7921 7981 8041 200344 200464 200104 200224 200404 200164 q QQ g qq Dp g QΩ g δλ g δ δŏ q οy δλ δ g οy g δy qq δλ g δλ g ōλ g δy g δŽ g Qγ δy Ω ŏ

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| AAAAA | AAATCTAACCAGACATTCAGGAATTGCTAGATTCTGGGAAATCAGTTCACCATGTTCA | CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCA [111111111111111111111111111111111 | | AGAGTCTTAATATATATATCCAGATGCATGTGTTTAACTTTATGTTACTACATGCACTTG AGAGTCTTAATATATATATCAGATGGCATGTGTTTACTTTATGTTACTACATGCACTTG AGAGTCTTAATATATATATCAGATGGCATGTGTTACTTTATGTTACTACATGCACTTG GCTGCATAAATGTGGTACAAGCATTCTGTCTTGAAGGCAGGTGCTTCAGGATACCATAT | ACACCTCAGAAGTTCTTTTTGGCATTAAATTTTAGCAAAGATATCTCATCTTTTTTTT | ACCCTCATTGTAGAAAGCTATAAAATGAATACAATTAAAGCTGTTATTTAATTAGCCAG | TATACTTTAATAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC TATACTTTAATAAATGTATATTGTATTG | CTTTACATTTGTCTTACGGAATATTTCATCACTGTGGTAGCCGAATTAATCGTGTT [1] | CATTCTGAAAGCATATGACAAATTATTTCTCTTTAATATCTTACTATATGGAAAGCAGA |
| GCTTAGAGG | AAAATCTAA | CTCGGCTCZ CTCGGCTCZ CTCGGCTCZ AGTAGCTGC | SACAGGGTT | AGAGTCTT/ | ACAGCTCA(| ACGCTCAT: ACGCTCAT: TGAAAAAC: TGAAAAAC: | TATACTTT: TATACTTT TATACTTT ATCTTGTG: | CTTTACAT: | CATTCTGA |
| 244 | 9001 2 201304 2 9061 2 201364 2 | 9121 (201424 (9181 2 | 9241 01544 9301 01604 | 9361 201664 3 9421 0 | 9481 i 201784 i 9541 i 201844 | 9601 201904 9661 201964 | 9721 202024 9781 202084 | 9841 202144 9901 202204 | 9961 202264 |
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; Patent No. 5872237
; GENERAL INFORMATION:
    APPLICANT: Kronmal, Gregory S.
    APPLICANT: Lauer, Peter M.
    APPLICANT: Taudy, David A.
    APPLICANT: Truchihashi, Zenta
    APPLICANT: Tsuchihashi, Zenta
    APPLICANT: Tsuchihashi, Zenta
    APPLICANT: Wolff, Roger K.
    TITLE OF INVENTION: Megabase Transcript Map: No. 5872237el
    TITLE OF INVENTION: Sequences and Antibodies Thereto
    NUMBER OF SEQUENCES: 31
    CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Db 203104 TAAAATCCCCAAATTTTTCATAAAC 203128
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Pred. No. 0;
0; Mismatches
                                                                                                 COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0, Version
CURRENT APPLICATION DATA:
FILING DATE: 01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                        ; NAME/KEY: misc_feature
; LOCATION: 1..246240
; OTHER INFORMATION: /note= "HLA-H.CONTIG"
US-08-724-394A-22
            Center, 8th
TOWNSEND
                                                                                                                                                                             CLASSIFICATION: 536
ATTORNEY/ACENT INFORMATION:
NAME: FILE, Renee, 35,136
REGISTRATION NUMBER: 35,136
REFERENCE/DOCKET NUMBER: 0179;
TELECPHONE: 415-576-0200
TELEPHONE: 415-576-0300
                                                                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
LENGTH: 246240 base pairs
TYPE: nucleic acid
STRANDEDNESS: not relevant
TOPOLOGY: not relevant
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100.0%;
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                                                                           COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
 and
          : Two Embarcadero
San Francisco
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Matches 10823; Conservative
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                          CITY: Sar
STATE: Cl
COUNTRY:
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QY 1501 CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG 1560
Db 193804 CTACGTGTATCCACATTTTACACATGACAAGAATGAGGCATGGCACGGCCTGCTTCCTGG 193863
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Db 193204 GGTTTCCACCTCAGAACGAATGCGTTGGGCGGGGGGCGCGGAAAGAGTGGCGTTGGGGA 193263
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Db 193024 TAAATAAATCTCGTAGTTCCTCACTTGAGCTGGAGCTGGGGCTCCTTGAACCTGG 193083
CAAATTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC 1620
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1021 GGGAGGCTCCTGAGAGGCCTACCTCGGGCCTTTCCCCCACTCTTGGCAATTGTTCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCTGAATTCTTCACCATTCCACCCACTTTTGGTGAGACCTGGGGTGGAGGTCTTAGGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCCIGGAAAATTAAGTATATGTTAGTTTTGAACGTTTGAACTGAACAATTCTCTTTTCGG
                                                                                                                                                                                                                                                                                                                                                                                       AACTCGGGTTTATTTCCAATGTCAGCTGTGCAGTTTTTTCCCCAGTCATCTCCAAACAGG
                                                                                 192844 TCAACCCTATCCGCAAGCCCCTCTCCTACTTTCTGCGTCCAGACCCCGTGAGGAGTGC
                                                            TCAACCCTATCCGCAAGCCCCTCTCCCTACTTTCTGCGTCCAGACCCCGTGAGGGAGTGC
                                                                                                                                             CTACCACTGAACTGCAGATAGGGGTCCCTCGCCCCAGGACCTGCCCCCCTCCCCCGGCTGT
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| 3 | m | m | m | m | e | m | m | æ | ĸ | m | m | m | e. | m | e | m | m | _ |
|--|--|--|-----------------------|--|--|--|---|---|---|---|--|--|---|--|---|---|--|--|
| 19392 | 1680 19398 | 1740 | 1800 | 1860 19416 | 1920 19422 | 1980 | 2040 | 2100 | 2160 19446 | 2220 19452: | 2280 19458: | 2340 | 2400 194703 | 2460 194763 | 2520 194823 | 2580 194883 | 2640 194943 | 2700 195003 |
| CAAAITTATTCAATGGTACACTGGGCTTTGGTGGCAGAGCTCATGTCTCCACTTCATAGC | . TATGATICTIAAACAICACACTGCATIAGAGGTIGAATAATAAAATTICAIGTIGAGCAG | AAATATTCATTGTTTACAAGTGTAAATGAGTCCCAGCCATGTGTTGCACTGTTCAAGCCC | Caagggagaggggaaac | GATGACAATAAGCAAATGAGCAGAAAGATATACAACATCAGGAAATCATGGGTGTTGTGA | GAAGCAGAGAAGTCAGGGCAAGTCACTCTGGGGCTGACACTTGAGCAGAGACATGAAGGA | AATAAGAATGATATTGACTGGGAGCAGTATTTCCCAGGCAAACTGAGTGGGCCTGGCAGG | TTGGATTAAAAAGGGGGTTTTCTCAGCACTACTCATGTGTGTG | CGGCGTGGGGGTGGGAAGGGGACTACCATCTGCATGTAGGATGTCTAGCAGTATCCTGT | CCTCCCTACTCACTAGGTGCTAGGAGCACTCCCCAGTCTTGACAACAAAATGTCTCT | AAACTTTGCCACATGTCACCTAGTAGACAAACTCCTGGTTAAGAAGCTCGGGTTGAAAA | AATAAACAAGTAGTGCTGGGGAGTAGAGGCCAAGAAGTAGGTAATGGGCTCAGAAGAGGA | GCCACAAACAAGGTTGTGCAGGCGCCTGTAGGCTGTGGTGTGAATTCTAGCCAAGGAGTA | ACAGTGATCTGTCACAGGCTTTTAAAGATTGCTCTGGCTGCTATGTGGAAAGCAGAATG | AAGGGACCAACAGTAAAAGCAGGGAGCCCAGCCAGGAAGCTGTTACACAGTCCAGGCAAG | AGGTAGTGGAGTGGGCTGGGTAGAAAAGGAGTGACAAACCATTGTCTCCTGAA | TATATTCTGAAGGAAGTTGCTGAAGGATTCTATGTTGTGTGAGAGAAAGAGAATTGG | CTGGGTCTAGTACTCATGCCAAGGAGGAGGCAAGGAGAGCAGATTCCTGAGCTCAGGA | GTTCAAGACCAGCCTGGGCAACACAGGAAAACCCCTTCTCTACAAAAATACAAAAATTA { |
| 193864 | , 1621) 193924 | , 1681 , 193984 | 1741 | 1801 | 194164 | 1921 | 1981 | 2041 | 2101 | 2161 194464 | 2221 194524 | 2281 194584 | 2341 | 2401 194704 | 2461 194764 | 2521 194824 | 2581 194884 | 2641 194944 |
| Ď | QY Db | QQ Db | OY Db | QY Db | 9 P | Qy Db | QY Db | à | o P | QY Db | Qy Db | Oy Db | QY Db | oy Db | Qy Db | Oy Db | QY Db | 94 Pp |

| 0y | 270 | GCTGGGTGTGGTGCCATGCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTTA | 760 |
|---------|--------|--|--------|
| QQ Q | 19500 | TGGGTGTGGTGGCATGCACCTGTGATCCTAGCTACTCGGGAGGCTGAGGTGGAGGTA | 195063 |
| δλ | 7 | TTGCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCACTGTACTTCAGC | 2820 |
| qq | 195 | GCTTGAGCCCAGGAAGTTGAGGCTGCAGTGAGCCATGACTGTGCCCACTGTACTTCAGC | 195123 |
| Qy | 7 2821 | AGGIGACAGAGCAAGACCCTGTCCCCTGACCCCTGAAAAAGAGAGAG | 2880 |
| qq | 19 | IAGGTGACAGACCAAGACCCTGTCTCCCCTGAACAAAAAAAA | 195183 |
| ΟY | 7 2881 | STTCTTTATTTTAATTTTATTGGCCTGAGCAGTGGGGGTAATTGGCAATGCCAT | 2940 |
| qq | 195184 | GACTITGTTCTTTATTTAATTTTATTGGCCTGAGCAGTGGGGGTAATTGGCAAT | 195243 |
| δλ | 7 2941 | GTGAAGGCAAAAGAGCAGTTTGGGGTAAATCAAGGATCTGCATTTG | 3000 |
| qq | 195244 | ICTGAGATGGTGAAGGCAGGAAGGGAAGGGAGTTTGGGGTAAATCAAGGATCTGCATTTG | 195303 |
| δλ | 3001 | CTTCCAAGTGGTGAGGCCACATAGGCAGTT | 3060 |
| qa | 195304 | GACATGTTAAGTTTGAGATTCCAGTCAGGCTTCCAAGTGGTGAGGCCACATAGGCAGTT | 95 |
| δŏ | 3061 | AGTGTAAGAATTCAGGACCAAGGCTGGGCACGGTGGCTCACTTCTGTAATCCCAGCACT | 3120 |
| qq | 195364 | GTAAGAATTCAGGACCAAGGCTGGGCTCACTTCTGTAATCCCAGCACT | 95 |
| Qy | 3121 | TGGTGGCTGAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGCTTGGCCAACA | 3180 |
| QΩ | 195424 | GGTGGCTGAGGCAGGTAGATCATTTGAGGTCAGGAGTTTGAGACAAGGTTGGCCAACA | 195483 |
| Qy | 3181 | CATGTCTACTAAAAATTAGCCTGGTGGTGGTGGCCT | 3240 |
| Ω | 195484 | GGTGAAACCCCATGTCTACTAAAAATACAAAAATTAGCCTGGTGTGGTGGCGCACGCCT | 'n |
| δλ | 3241 | CCTTGAACCCAGGAGGTGCAGG | ĕ |
| q | 195544 | AGTCCCAGGTTTTTCAGGAGGTTAGGTAGGAGAATCCCTTGAACCCAGGAGGTGCAGG | 5 |
| δλ | 3301 | CACTGCACTCCAGCCTGGGTGATAGAGTGAGACTCTGT | 3360 |
| qq | 19 | IGCAGTGAGCTGAGATTGTGCCACTGCACTCAGCCTGGGTGAATAGAGTGAGACTCTGT | 195663 |
| QY | 3361 | PATTCCTCAGGATTTGGG | 3420 |
| qq | 195 | CABABABABABABABABABABABABABACTGABGGABTTATTCCTCAGGATTTGGG | 195723 |
| Qγ | 3421 | TTAAC | 3480 |
| QQ | 1957 | CTAATTTGCCCTGAGCACCAACTCCTGAGTTCAACTACCATGGCTAGACACGCTTAAC | 195783 |
| Qy | 3481 | TGTCTAATCATGAGTATTGGAATAGGAT | 3540 |
| qq | 195784 | TAGAATCCACCAGCTTTAGTGGAGTCTGTTTAATCATGAGTATTGGAATAGGAT | 195843 |
| δy | 3541 | GGCAGTGAGGGGGTGGCAGCCACGTGTGGCAGAAAAAGCACACAAGGAAAGAGC | 3600 |
| qa | 195844 | 3GGGCAGTGAGGGGGGGGGGGCAGCCACGTGGGGAAAAGCACAAAGGAGC | 195903 |
| δλ | 3601 | GCAACTCACCCTTCACAAAATGAGGA | 3660 |
| qq | 195904 | CAGGACTGTCATATGGAAGAAAGACAGGACTGCAACTCACCTTCACAAAATGAGGA | 195963 |
| ΟŊ | 366 | CCAGACACACAGGTATGATAATGAGTTGATGCAGGTGTGAGCCTCAACATCCTGCTCC 3 | 3720 |
| QQ Q | 19596 | SACACAGCTGATGGTATGAGTTGATGCAGGTGTGGGAGCCTCAACATCCTGCTCCC | 196023 |
| Qy | 372 | CICCTACTACACATGGTTAAGGCCTGTTGCTGTGTCTCCAGGTTCACACTCTGCACTA 3 | 3780 |
| qq | 196024 | CTACTACACATGGTTAAGGCCTGTTGCTCTGTCTCCAGGTTCACACTCTGCACTA | 196083 |

| 197164 | 24 | 197284 | 197 | 197404 | 64 | 13 | 197584 | 197644 | 3401 | 197764 | 197824 | 197884 | Db 197944 TC | 198004 | 198064 | 198124 | 198184 | Qy 5941 TG |
|--|--|--|--|---|--|--|---|---|--------------|--|---|--|---|--|--|--|--|---|
| 81 CCTCTTCATGGGTGCCTCAGAGCAGGACCTTGGTCTTTCTT | 41 CGTGGATGACCAGCTGTTCGTGTTCTATGATNATGAGAGTCGCCGTGTGGAGCCCCGAAC 3900 | 01 TCCATGGGTTTCCAGTAGAATTTCAAGCCAGATGTGGGTGCAGCTGAGTCAGAGTCTGAA 3960 | 61 AGGGTGGGATCACATGTTCACTGTTGACTTCTGGACTATTATGGAAAATCACAACCACAG 4020 | 21 CAAGGGTATGTGGAGAGGGGCCTCACCTTCCTGAGGTTGTCCAGAGCTTTTCATCTTTTC 4080 11 | 081 ATGCATCTTGAAGGAAACAGCTGGAAGTCTGAGGTCTTGTGGGAGCAGGGGAAGAGGGAAG 4140 | 4141 GAATTIGCITCCIGAGATCATTIGGICCITGGGGAIGGIGGAAATAGGGACCIAITCCIT 4200 | 201 TGGTTGCAGTTAACAAGGCTGGGGATTTTTCCAGAGTCCCACACCCTGCAGGTCATCCTG 4260 | 61 GGCTGTGAAATGCAAGAAGACAACAGTACCGAGGCTACTGGAAGTACGGGTATGATGGG 4320 | 21 C 24 C | BI TGGCCCACCAAGCTGGAGTGGGAAAGGCACAAGATTCGGGCCAGAACAGGGCCTAC 4440 | 11 CTGGAGAGGACTGCCCTGCACAGCTGCAGCTTGCTGGAGCTGGGGAGAGGTGTTTTG 4500 | 4501 GACCAACAAGGTATGGTGGAAACACACTTCTGCCCCTATACTCTAGTGGCAGAGTGGAGG 4560 | 4561 AGGITGCAGGCACGGAATCCCTGGITGGAGTITCAGAGGTGGCTGAGGCTGIGTGCCTC 4620 | 621 TCCAAATTCTGGGAAGGGCTTTCTCAATCCTAGAGTCTCTACCTTATAATTGAGATGTA 4680 | 681 TGAGACAGCCACAAGTCATGGGTTTAATTTCTTTTCTCCATGCATAGGCTCAAAGGGAA 4740 | 741 GTGTCTATGGCCCTTGCTTTTATTTAACCAATAATCTTTTGTATATTTATACCTGTTAA 4800 | 4801 AAATTCAGAAATGTCAAGGCCGGGCACGGTGGCTCACCCCTGTAATCCCAGCACTTTGGG 4860 | 861 AĠGCCGAGGCGGGTGGTCACAAGGTCAGGAGTTTGAGACCAGCCTGACCAACATGGTGAA 4920 |
| 3781 | 38 | 39 1962 | y 3961 b 196264 | y 4021 b 196324 | 4 | 19 | 4 | 42 | 43 | 43 | 44 | 19 | 19 | 4 | 4 | Oy 47 Db 1970 | Qy 48 Db 1971 | 0y 48 |
| oy D | oy D | g B | OY Db | Oy Db | Oy Db | 0 <u>y</u> | 9. Pb | Q Dp | oy Ob | Oy Dp | Qy Db | oy D | Oy Db | Qy Db | Q D | 0 0 | 0 0 | ø |

AGAGATATACGTNCCAGGTGGACCCCAGGCCTGGATCAGCCCCTCATTGTGATCTGG 5880 TCATCCTTCCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC 197943 198123 197763 5400 5640 5760 GAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTTTTGTTAGGGGTGGGCTGAGG 6000 5100 5280 CTTCAGTGACCACTCTACGGTGTCGGGCCTTGAACTACTACCCCCAGAACATCACCATG AGTGGCTGAAGGATAAGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTG SGGCAATTTTATCTATCAGAACAAGAACATGGGTAACAGATATGTATATTTACATGTG 3GAGAACAAGCTGATCTGACTGCTCTCCAAGTGACACTGTTAGAGTCCAATCTTAGG TCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACC CAAGATCGCGCCACTGCACTCCAGCCTAGGCAGCAGAGTGAGACTCCATCTTAAAAAA 3AACATAGCAATAATCACTGAAGCTACCTATCTTACAAGTCCGCTTCTTATAACAATGC

| 303 | 0 363 | 0 4 2 3 | 0 483 | 43 | 03 | - 63 | 23 | _ 83 | 43 | 03 | 63 | 23 | 83 | 43 | 03 | 63 | 23 | ſ |
|---|---|--|---|--|--|---|--|--|--|--|---|--|---|--|---|---|--|--|
| G 1983 | 198 | 612 | T 6180 T 1984 | 6240 | 6300 | 6360 | 6420 | 6480 | 6540 | 6600 | 6660 | 6720 | 6780 1990 | 6840 1991 | 1992 | 6960 1992 | 7020 | 7080 |
| TCAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTGGGCTGAG | GTGGCAATCAAAGGCTTTAACTTGCTTTTTTTTTAGAGCCCTCACCGTCTGGCACCC | TAGTCATTGGAGTCATCAGTGGAATTGCTGTTTTTGTCGTCATCTTGTTCATTGGAATTT | TGTTCATAATATTAAGGAAGAGGCAGGGTTCAAGTGAGTAGGAACAAGGGGGAAGTCTC | TAGTACCTCTGCCCCAGGGCACAGTGGGAAGAGGGGCAGAGGGGATCTGGCATCCATGGG | AAGCATTTTCTCATTTATATTCTTTGGGGACACCAGCAGCTCCCTGGGAGACAGAAAT | AATGGTTCTCCCCAGAATGAAAGTCTCTAATTCAACAACATCTTCAGAGCACCTACTAT | TTTGCAAGAGCTGTTTAAGGTAGTACAGGGGCTTTGAGGTTGAGAAGTCACTGTGGCTAT | TCTCAGAACCCAAATCTGGTAGGGAATGAAATTGATAGCAAGTAAATGTAGTTAAAGAAG | ACCCCATGAGGTCCTAAAGCAGGCAGGAAGCAAATGCTTAGGGTGTCAAAGGAAAGAATG | ATCACATTCACCTGGGGATCAAGATAGCCTTCTGGATCTTGAAGGAGAAGCTGGATTCCA | TTAGGTGAGGTTGAAGATGAGGGGGGTCTACACAGACGGGGGGAGCAAGCGTGCCAAGTAGGA | GAGTATAAGGCATACTGGGAGATTAGAAATAATTACTGTACCTTAACCCTGAGTTTGCGT | AGCTATCACTCACCAATTATGCATTTCTACCCCTGAACATCTGTGGGGTGTAGGGAAAAGA | GAATCAGAAAGAAGCCAGCTCATACAGAGTCCAAGGGTCTTTTGGGATATTGGGTTATGA | TCACTGGGGTGTCATTGAAGGATCCTAAGAAAGGGGGCCACGATCTCCCTTATATGGTG | aatotottaagaagttagatgagaggtgagagacagacagttagaaagccaataagcat | TTCCAGATGAGAGATAATGGTTCTTGAAATCCAATAGTGCCCAGGTCTAAATTGAGATGG | GTGAATGAGGAAAATAAGGAAGAGAAGAGGCAAGATGCTGCCTAGGTTTGTGATGCCT |
| 198244 | 6001 198304 | 6061 198364 | 6121 198424 | 6181 198484 | 6241 198544 | 6301 198604 | 6361 198664 | 6421 198724 | 6481 198784 | 6541 198844 | 6601 198904 | 6661 198964 | 6721 199024 | 6781 199084 | 6841 199144 | 6901 199204 | 6961 199264 | 7021 |
| qq | Qy Db | Oy Db | QY Db | QY Db | Qy Db | Qy Db | Qy Dp | Qy Db | Qy Dp | Qy Dp | Qy Db | Qy Db | Oy Op | δ Q | oy D | QY DP | Oy Ob | δο da |

| CTTTCCTGGGTCT TGAGTGCACGCF TGAGTGCACGCCGGTCT TGAGTGCACGCCGGTCT TGAGTGCACTTP | 708 714 714 714 714 714 714 714 714 |
|---|---|
|---|---|

| Db 201544 Qy 930 | Db 20160 | 2016 | 2017 | 2017 | 201 | QY 960 Db 20190 | 2019 | 2020 | 202 | 202 | 2022 | 20 | UY 1002 Db 20232 | 7 | 0 | 2025 | 20 | n D |
|---|--|---|--|---|---|---|---|---|--|---|--|--|--|--|--|--|---|--|
| 822 | GGTGGCAG 8280 GGTGGCAG 200583 | CCAGGAGG 8340 CCAGGAGG 200643 | GAGTGAGA 8400 GAGTGAGA 200703 | GTGAAGTA 8460 GTGAAGTA 200763 | TCTGACCG 8520 TCTGACCG 200823 | ATAGAGAA 8580 ATAGAGAA 200883 | AATCACAT 8640 AATCACAT 200943 | TAAAAGTC 8700 TAAAAGTC 201003 | GGCATTCA 8760 GGCATTCA 201063 | TGCTGGGC 8820 TGCTGGGC 201123 | GGTATTTC 8880 GGTATTTC 201183 | ACCAAGTG 8940 | TTAAAAA 9000 TAAAAAA 201303 | CCATGTTCA 9060 | GGCATGAT 9120 GGCATGAT 201423 | GCCTCCCA 9180 GCCTCCCA 201483 | TTAGTAGA 9240 TTAGTAGA 201543 | GATCCGCC 9300 |
| GGGAGGCCAAAGCGGGTGGATCACGAGGTCAGGAGATCGAGACCATCCTGG | TAACATGGTGAAACCCCATCTCTAATAAAATACAAAAATTAGCTGGGCGTGGTGGCGG | ACCCTGTAGTCCCAGCTACTCGGAAGGCTGAGGCAGGAGAATGGCATGAACCCAGGAGG | CAGAGCTIGCAGTGAGCCGAGTITGCGCCACTGCACTCCAGCCTAGGTGACAGTGAGA | CTCCATCTCAAAAAAATAAAAATAAAAATAAAAAATGAAAAAAAA | TAGAGTATCTCATAGTTTGTCAGTGATAGAAACAGGTTTCAAACTCAGATCAATCTGACGG | TTTGATACATCTCAGACACCACTACATTCAGTAGTTTAGATGCCTAGAATAAATA | GGAAGGAGATGCTTCTTCTTGTCTCATGTGTTTCTTCTGAGTGAG | GAAGGGGAACAGCAGAAACAACTGATCCTCAGCTGTCATGTTTCCTTTAAAAGTC | CCTGAAGGAAGGTCCTGGAATGTGACTCCCTTGCTCCTCTGTTGCTCTTTGGCATTCA | TTTCTTTGGACCCTACGCAAGGACTGTAATTGGTGGGGACAGCTAGTGGCCCTGCTGGTGGCCTTGTTGTTTTTTTT | TTCACACACGGTGTCCTCCCTAGGCCAGTGCCTCTGGAGTCAGAACTCTGGTGGTATTTC | CCTCAATGAAGTGGAGTAAGCTCTCTCATTTTGAGATGGTATAATGGAAGCCACCAAGTG | GCTTAGAGGATGCCCAGGTCCTTCCATGGAGCCACTGGGGTTCCGGTGCACATTAAAAAA | AAAAICTAACCAGGACAITCAGGAAITGCTAGAITCTGGGAAAICAGITCACCAIGITCA | AAAGAGTCTTTTTTTTTTTTGAGACTCTATIGCCCAGGCTGGAGTGCAATGGCATGAT | CTCGGCTCACTGTAACCTCTGCCTCCCAGGTTCAAGGGATTCTCTGTGTCTCAGCCTCCCAGGTTCTAGCTTCTCTGTGTTCTAGCGTTCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCAGGTTCAAGCGATTCTCCTGTCTCAGCCTCCCCA | AGTAGCTGGGATTACAGGCGTGCACCACCATGCCCGGCTAATTTTGTATTTTTAGTAGA | GACAGGGTITCACCATGTIGGCCAGGCIGGTCTCGAACTCTCCTGACCICGTGAICCGCC |
| AGCACTTTGGG AGCACTTTGGG | TAACATGGTGA TAACATGGTGA | ACGCCTGTAGT | CAGAGCTTGCA CAGAGCTTGCA | CTCCATCTCAA | TAGAGTATCTC TAGAGTATCTC | TTTGATACATC TTGATACATC | GGAAGGAGATG GGAAGGAGATG | GAAGGGGAACA | CCTGAAGGAAG | TTTCTTTGGAC | TTCACACACGG | CCTCAATGAAG | GCTTAGAGGAT GCTTAGAGGAT | AAAATCTAACC | AAAGAGTCTTT AAAGAGTCTTT | CTCGGCTCACT | AGTAGCTGGGA | GACAGGGTTTC |
| 8161 2 | 8221 | 8281 200584 | 8341 (200644 (| 8401 (| 8461 | 8521 200824 | 8581 200884 | 8641 | 8701 | 8761 | 8821 201124 | 8881 | 8941 | 9001 | 9061 | 9121 | 9181 | 9241 |
| 0y 0p | Qy Dp | Qy Db | Qy Db | Qy Db | Qy Db | Qy Db | Oy Db | Q Op | oy a | Q D | Oy Dp | Qy Db | Oy Db | Qy Db | Oy Db | Qy Db | oy ob | ογ |

CATTTTAAATTCTTATTCACCTCTGGCAAAACCATTCACAAACCATGGTAGTAAGAAGAA 10380 AGGTAAGCATTTGTTTTATATTTGGTTTTTTTTTCACCTGGGCTGAGATTTCAAGAAACACC CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCCT 44 CCAGTCTTCACAGTAACACATTTCACTAACACATTTACTAAACATCAGCAACTGTGGCCT TTAAACCATTTTCTTTTTTGTGGTTAGAAAGTTATGTAGAAAAAGTAAATGTGATTT TATACTTTAATAAATGTATATTGTATTGTATACTGCATGATTTTATTGAAGTTCTTGTTC CITIACATTITGTCTTACGGAATATTTTCATTCAACTGTGGTAGCCGAATTAATCGTGTT TGCCTCGGCCTCCCAAAGTGCTGAGATTACAGGTGTGAGCCACCCTGCCCAGCCGTCAAA AGAGTCTTAATATATATATCCAGATGGCATGTTTACTTTATGTTACTACATGCACTTG

| CATTITAAAITCTTAITCACCTCTGGCAAAACCATTCACAAACCATGGTAGTAAAGAGAA 202683 | GGGTCACACCTGGTGCCATAGGTAAATGTACCACGGTGGTCCGGTGACCAGAGATGCAG 10440 | OY 10441 CGCTGAGGGTTTTCCTGAAGGTAAAGGAATAAAGAATGGGTGGAGGGGCGTGCACTGGAA 10500 | atcactigtagagaaagccctgaaatitgagaaacaaacaagaactactaccag 10560 | CTATTTGAATTGCTGGAATCACAGGCCATTGCTGAGCTGCCTGAACTGGGAACACAACAG 10620 | OY 10621 AAGGAAAACAACTCTGATAATCATTGAGTCAAGTACAGCAGGTGATTGAGGACTGC 10680 | TGAGAGGTACAGGCCAAAATTCTTATGTTGTATTATAATAATGTCATCTTATAAATACTGT 10740 | CAGTATTTTATAAAACATTCTTCACAAACTCACACACTTTAAAAACAAAACAAC | 5 28 | |
|---|---|---|--|--|---|---|--|---|--|
| CATTTTAAATTCTTATTCACCTCTGGCAAA | | CGCTGAGGGTTTTCCTGAAGGTAAAGGAAT | | CTATTTGAATTGCTGGAATCACAGGCCATT | AAGGAAAACAAACCACTCTGATAATCATTG | TGAGAGGTACAGGCCAAAATTCTTATGTTC | | TAAAATCCCCAAATTTTCATAAAC 10825 TAAAATCCCCAAATTTTCATAAAC 203128 | |
| Db 202624 | Oy 10381 Db 202684 | Oy 10441 Db 202744 | Qy 10501 Db 202804 | Qy 10561 Db 202864 | Qy 10621 Db 202924 | Qy 10681 Db 202984 | Oy 10741 Db 203044 | Qy 10801 Db 203104 | |
| ď | Q _y | QY | QY | Qy Db | Q7 Dp | Qy | Qy Db | Qy | |

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